SEQUENCE LISTING

<110>   Novartis Forschungsstiftung, Zweigniederlassung Friedrich Miescher Institute for Biomedical Research

<120>   Gene for increased somatic recombination

<130>   1-32546B

<160>   30

<170>   PatentIn version 3.1

<210>   1

<211>   4524

<212>   DNA

<213>   Arabidopsis thaliana

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<221>   CDS

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ttc gat ctc gag ccg ttg atg aag ttt aga att ccg aaa cct gaa gat      96
Phe Asp Leu Glu Pro Leu Met Lys Phe Arg Ile Pro Lys Pro Glu Asp
            20                  25                  30

gaa gtt gat tat tat ggg agt agt agc cag gat gaa agt aga agc act     144
Glu Val Asp Tyr Tyr Gly Ser Ser Ser Gln Asp Glu Ser Arg Ser Thr
            35                  40                  45

caa ggt ggg gta gtg gca aac tac agc aat ggg tct aaa tcg aga atg     192
Gln Gly Gly Val Val Ala Asn Tyr Ser Asn Gly Ser Lys Ser Arg Met
        50                  55                  60

aat gcg agc tcc aag aag aga aag cgg tgg aca gaa gct gag gat gca     240
Asn Ala Ser Ser Lys Lys Arg Lys Arg Trp Thr Glu Ala Glu Asp Ala
65                  70                  75                  80
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gag gac gat gat gat ctc tac aat caa cat gtt act gag gag cac tac       288
Glu Asp Asp Asp Asp Leu Tyr Asn Gln His Val Thr Glu Glu His Tyr
            85                  90                  95

cga tca atg ctt ggg gag cat gta caa aaa ttc aaa aat agg tcc aag       336
Arg Ser Met Leu Gly Glu His Val Gln Lys Phe Lys Asn Arg Ser Lys
            100                 105                 110

gag act caa ggg aat cct cct cat ctg atg ggt ttt ccg gtg cta aag       384
Glu Thr Gln Gly Asn Pro Pro His Leu Met Gly Phe Pro Val Leu Lys
            115                 120                 125

agc aat gtg ggc agt tac aga ggt agg aaa cca ggg aat gat tac cat       432
Ser Asn Val Gly Ser Tyr Arg Gly Arg Lys Pro Gly Asn Asp Tyr His
    130                 135                 140

ggg agg ttc tat gac atg gac aac tct cca aat ttt gca gct gat gtg       480
Gly Arg Phe Tyr Asp Met Asp Asn Ser Pro Asn Phe Ala Ala Asp Val
145                 150                 155                 160

acc cca cat agg cga gga agc tac cat gat cgt gat att aca ccc aag       528
Thr Pro His Arg Arg Gly Ser Tyr His Asp Arg Asp Ile Thr Pro Lys
                165                 170                 175

ata gca tat gaa cct tcg tat ttg gac att ggt gat ggt gtc atc tac       576
Ile Ala Tyr Glu Pro Ser Tyr Leu Asp Ile Gly Asp Gly Val Ile Tyr
            180                 185                 190

aaa atc ccc cca agt tat gac aag ctg gtg gca tca tta aac tta ccg       624
Lys Ile Pro Pro Ser Tyr Asp Lys Leu Val Ala Ser Leu Asn Leu Pro
            195                 200                 205

agc ttt tca gac att cat gtg gaa gaa ttt tac ttg aaa gga act ctg       672
Ser Phe Ser Asp Ile His Val Glu Glu Phe Tyr Leu Lys Gly Thr Leu
    210                 215                 220

gat ctg aga tca tta gca gaa ctg atg gca agt gat aaa agg tct gga       720
Asp Leu Arg Ser Leu Ala Glu Leu Met Ala Ser Asp Lys Arg Ser Gly
225                 230                 235                 240

gta aga agc cgt aat gga atg ggt gag cct cga cct caa tat gaa tct       768
Val Arg Ser Arg Asn Gly Met Gly Glu Pro Arg Pro Gln Tyr Glu Ser
                245                 250                 255

ctt caa gct aga atg aag gcc ctg tca cct tca aac tcc acc cca aat       816
Leu Gln Ala Arg Met Lys Ala Leu Ser Pro Ser Asn Ser Thr Pro Asn
                260                 265                 270

ttt agc ctc aag gtg tca gaa gct gca atg aat tct gcc att cca gaa       864
Phe Ser Leu Lys Val Ser Glu Ala Ala Met Asn Ser Ala Ile Pro Glu
            275                 280                 285

gga tct gct gga agt act gca cgg aca att ctg tct gag ggt ggt gtt       912
Gly Ser Ala Gly Ser Thr Ala Arg Thr Ile Leu Ser Glu Gly Gly Val
            290                 295                 300

tta cag gtc cat tac gtg aag att ctg gag aag ggg gat aca tac gag       960
Leu Gln Val His Tyr Val Lys Ile Leu Glu Lys Gly Asp Thr Tyr Glu
305                 310                 315                 320

att gtt aaa cga agt cta ccg aag aag ctg aaa gca aag aat gat cct      1008
Ile Val Lys Arg Ser Leu Pro Lys Lys Leu Lys Ala Lys Asn Asp Pro
                325                 330                 335

gca gtc att gag aaa aca gaa agg gat aaa att aga aaa gcc tgg atc      1056
Ala Val Ile Glu Lys Thr Glu Arg Asp Lys Ile Arg Lys Ala Trp Ile
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                340                      345                      350

aat att gtc aga aga gat ata gca aaa cac cat aga att ttc act act    1104
Asn Ile Val Arg Arg Asp Ile Ala Lys His His Arg Ile Phe Thr Thr
        355                 360                 365

ttt cat cgt aaa cta tca att gat gcc aag agg ttt gca gat ggt tgc    1152
Phe His Arg Lys Leu Ser Ile Asp Ala Lys Arg Phe Ala Asp Gly Cys
        370                 375                 380

caa aga gag gtg aga atg aag gtg ggt aga tca tac aaa atc cca aga    1200
Gln Arg Glu Val Arg Met Lys Val Gly Arg Ser Tyr Lys Ile Pro Arg
385                 390                 395                 400

act gca cca att cgc act agg aag ata tcc aga gac atg ctg cta ttc    1248
Thr Ala Pro Ile Arg Thr Arg Lys Ile Ser Arg Asp Met Leu Leu Phe
                405                 410                 415

tgg aag cga tat gac aag cag atg gca gaa gag agg aaa aag caa gaa    1296
Trp Lys Arg Tyr Asp Lys Gln Met Ala Glu Glu Arg Lys Lys Gln Glu
                420                 425                 430

aag gaa gct gca gag gct ttt aaa cgt gaa cag gag cag cga gag tca    1344
Lys Glu Ala Ala Glu Ala Phe Lys Arg Glu Gln Glu Gln Arg Glu Ser
        435                 440                 445

aaa agg cag caa caa agg ctc aat ttc ctt att aaa cag act gag ctt    1392
Lys Arg Gln Gln Gln Arg Leu Asn Phe Leu Ile Lys Gln Thr Glu Leu
        450                 455                 460

tac agt cac ttc atg caa aac aag acc gat tcg aat cct tcc gaa gcc    1440
Tyr Ser His Phe Met Gln Asn Lys Thr Asp Ser Asn Pro Ser Glu Ala
465                 470                 475                 480

tta cca ata ggt gat gaa aat ccg att gac gaa gtg ctc cca gaa act    1488
Leu Pro Ile Gly Asp Glu Asn Pro Ile Asp Glu Val Leu Pro Glu Thr
                485                 490                 495

tca gcg gca gaa cct tct gag gta gag gat cct gaa gag gct gaa ctg    1536
Ser Ala Ala Glu Pro Ser Glu Val Glu Asp Pro Glu Glu Ala Glu Leu
                500                 505                 510

aag gaa aag gtc ttg aga gct gcc caa gat gcg gtg tct aag cag aag    1584
Lys Glu Lys Val Leu Arg Ala Ala Gln Asp Ala Val Ser Lys Gln Lys
                515                 520                 525

caa ata aca gat gca ttt gac act gaa tat atg aag cta cgc caa act    1632
Gln Ile Thr Asp Ala Phe Asp Thr Glu Tyr Met Lys Leu Arg Gln Thr
        530                 535                 540

tct gaa atg gaa ggt cct tta aat gat ata tca gtt tct ggc tcg agc    1680
Ser Glu Met Glu Gly Pro Leu Asn Asp Ile Ser Val Ser Gly Ser Ser
545                 550                 555                 560

aat ata gat ttg cat aac cca tct aca atg cct gtt aca tca aca gtt    1728
Asn Ile Asp Leu His Asn Pro Ser Thr Met Pro Val Thr Ser Thr Val
                565                 570                 575

cag act cca gag tta ttt aaa gga acc ctt aaa gaa tac caa atg aaa    1776
Gln Thr Pro Glu Leu Phe Lys Gly Thr Leu Lys Glu Tyr Gln Met Lys
                580                 585                 590

ggc ctt cag tgg cta gtc aat tgt tat gag cag ggt ttg aat ggc ata    1824
Gly Leu Gln Trp Leu Val Asn Cys Tyr Glu Gln Gly Leu Asn Gly Ile
                595                 600                 605
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ctt gct gat gaa atg ggc ttg ggt aag act att caa gct atg gcg ttc    1872
Leu Ala Asp Glu Met Gly Leu Gly Lys Thr Ile Gln Ala Met Ala Phe
610             615             620

ttg gca cat ttg gct gag gaa aag aac att tgg ggt cca ttt ctt gtt    1920
Leu Ala His Leu Ala Glu Glu Lys Asn Ile Trp Gly Pro Phe Leu Val
625             630             635             640

gtt gcc cct gcc tct gtt ctt aac aat tgg gct gat gaa atc agt cgt    1968
Val Ala Pro Ala Ser Val Leu Asn Asn Trp Ala Asp Glu Ile Ser Arg
                645             650             655

ttc tgt cct gac ttg aaa act ctt cca tat tgg gga gga tta caa gaa    2016
Phe Cys Pro Asp Leu Lys Thr Leu Pro Tyr Trp Gly Gly Leu Gln Glu
            660             665             670

cga aca att tta aga aag aat atc aat ccc aag cgt atg tac cga agg    2064
Arg Thr Ile Leu Arg Lys Asn Ile Asn Pro Lys Arg Met Tyr Arg Arg
            675             680             685

gat gct ggc ttt cat att ttg att act agc tat cag cta tta gtc act    2112
Asp Ala Gly Phe His Ile Leu Ile Thr Ser Tyr Gln Leu Leu Val Thr
            690             695             700

gat gaa aag tat ttt cgc cgg gtg aag tgg caa tat atg gtg cta gat    2160
Asp Glu Lys Tyr Phe Arg Arg Val Lys Trp Gln Tyr Met Val Leu Asp
705             710             715             720

gag gcc caa gca atc aag agt tcc tcc agt ata aga tgg aaa acc ctt    2208
Glu Ala Gln Ala Ile Lys Ser Ser Ser Ser Ile Arg Trp Lys Thr Leu
                725             730             735

ctt agt ttt aac tgt cgg aac cga ttg ctt ctg act ggt act cca att    2256
Leu Ser Phe Asn Cys Arg Asn Arg Leu Leu Leu Thr Gly Thr Pro Ile
                740             745             750

cag aac aac atg gca gag tta tgg gcc ctg ctg cat ttc atc atg cca    2304
Gln Asn Asn Met Ala Glu Leu Trp Ala Leu Leu His Phe Ile Met Pro
            755             760             765

atg ttg ttt gac aac cat gat caa ttt aat gaa tgg ttc tca aaa gga    2352
Met Leu Phe Asp Asn His Asp Gln Phe Asn Glu Trp Phe Ser Lys Gly
770             775             780

att gag aat cat gct gaa cac gga ggc act tta aat gag cac cag ctt    2400
Ile Glu Asn His Ala Glu His Gly Gly Thr Leu Asn Glu His Gln Leu
785             790             795             800

aac aga ctg cat gcg atc ttg aaa ccg ttc atg ctt cga cgg gta aaa    2448
Asn Arg Leu His Ala Ile Leu Lys Pro Phe Met Leu Arg Arg Val Lys
            805             810             815

aag gat gtg gtt tct gag cta act aca aag acg gaa gtt aca gta cac    2496
Lys Asp Val Val Ser Glu Leu Thr Thr Lys Thr Glu Val Thr Val His
            820             825             830

tgc aag ctc agt tct cga caa caa gct ttt tat cag gct att aag aac    2544
Cys Lys Leu Ser Ser Arg Gln Gln Ala Phe Tyr Gln Ala Ile Lys Asn
            835             840             845

aaa att tct ctg gct gag ttg ttt gat agc aac cgc gga caa ttt act    2592
Lys Ile Ser Leu Ala Glu Leu Phe Asp Ser Asn Arg Gly Gln Phe Thr
850             855             860

gat aag aaa gta ttg aat tta atg aat att gtc att caa cta agg aag    2640
Asp Lys Lys Val Leu Asn Leu Met Asn Ile Val Ile Gln Leu Arg Lys
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865                    870                    875                    880
gtt tgc aac cat cca gag ttg ttc gaa agg aat gaa ggg agc tcg tat        2688
Val Cys Asn His Pro Glu Leu Phe Glu Arg Asn Glu Gly Ser Ser Tyr
                885                     890                 895

ctc tac ttt gga gtg act tcc aat tct ctt ttg ccc cat ccc ttt ggt        2736
Leu Tyr Phe Gly Val Thr Ser Asn Ser Leu Leu Pro His Pro Phe Gly
                900                 905                     910

gag cta gag gat gta cat tat tct ggt ggt caa aat ccg ata ata tac        2784
Glu Leu Glu Asp Val His Tyr Ser Gly Gly Gln Asn Pro Ile Ile Tyr
                915                 920                 925

aag ata cct aag cta cta cac caa gag gtg ctc caa aat tct gaa aca        2832
Lys Ile Pro Lys Leu Leu His Gln Glu Val Leu Gln Asn Ser Glu Thr
        930                 935                 940

ttt tgt tct tct gtc ggg cgt ggc atc tca aga gaa tct ttt ctg aag        2880
Phe Cys Ser Ser Val Gly Arg Gly Ile Ser Arg Glu Ser Phe Leu Lys
945                 950                 955                 960

cat ttt aat ata tat tca cct gag tat att ctt aag tca ata ttc cca        2928
His Phe Asn Ile Tyr Ser Pro Glu Tyr Ile Leu Lys Ser Ile Phe Pro
                965                 970                 975

tct gat agt ggg gta gat caa gtg gtt agt gga agt gga gca ttt ggc        2976
Ser Asp Ser Gly Val Asp Gln Val Val Ser Gly Ser Gly Ala Phe Gly
                980                 985                 990

ttt tca cgc ttg atg gat cta tca  cca tca gaa gtt gga  tat ctg gct      3024
Phe Ser Arg Leu Met Asp Leu Ser Pro Ser Glu Val Gly Tyr Leu Ala
                995                 1000                1005

ctg tgt tct gtt gca gaa agg  cta tta ttt tct ata  ctg agg tgg         3069
Leu Cys Ser Val Ala Glu Arg Leu Leu Phe Ser Ile Leu Arg Trp
    1010                1015                1020

gag cgg caa ttt ttg gat gaa  tta gtt aac tct ctt  atg gag tcc         3114
Glu Arg Gln Phe Leu Asp Glu Leu Val Asn Ser Leu Met Glu Ser
    1025                1030                1035

aag gat ggt gat ctt agt gac  aat aac atc gag aga  gtt aaa acc         3159
Lys Asp Gly Asp Leu Ser Asp Asn Asn Ile Glu Arg Val Lys Thr
    1040                1045                1050

aaa gct gtc aca aga atg ttg  ctg atg cca tca aaa  gtt gaa acg         3204
Lys Ala Val Thr Arg Met Leu Leu Met Pro Ser Lys Val Glu Thr
    1055                1060                1065

aat ttt cag aaa agg aga cta  agc aca ggg cct acc  cgt cct tca         3249
Asn Phe Gln Lys Arg Arg Leu Ser Thr Gly Pro Thr Arg Pro Ser
    1070                1075                1080

ttt gaa gcg cta gtg atc tct  cat cag gat agg ttt  ctt tca agt         3294
Phe Glu Ala Leu Val Ile Ser His Gln Asp Arg Phe Leu Ser Ser
    1085                1090                1095

atc aaa ctc ctg cat tct gca  tat act tat atc cca  aaa gcc aga         3339
Ile Lys Leu Leu His Ser Ala Tyr Thr Tyr Ile Pro Lys Ala Arg
    1100                1105                1110

gct cca cct gta agc att cat  tgc tcg gac aga aat  tcg gca tac         3384
Ala Pro Pro Val Ser Ile His Cys Ser Asp Arg Asn Ser Ala Tyr
    1115                1120                1125
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aga gtt aca gaa gaa tta cat  caa cca tgg ctt aag  aga cta tta        3429
Arg Val Thr Glu Glu Leu His  Gln Pro Trp Leu Lys  Arg Leu Leu
    1130                1135                1140

atc ggt ttt gca cga acg tca  gaa gct aat gga ccc  agg aag cct        3474
Ile Gly Phe Ala Arg Thr Ser  Glu Ala Asn Gly Pro  Arg Lys Pro
    1145                1150                1155

aac agc ttt cca cat cct tta  atc caa gaa att gat  tca gaa ctt        3519
Asn Ser Phe Pro His Pro Leu  Ile Gln Glu Ile Asp  Ser Glu Leu
    1160                1165                1170

cca gtt gtg cag cct gcg ctt  caa ctg aca cac aga  ata ttt ggt        3564
Pro Val Val Gln Pro Ala Leu  Gln Leu Thr His Arg  Ile Phe Gly
    1175                1180                1185

tct tgc cct cca atg caa agt  ttt gac cca gca aag  ttg ctc acg        3609
Ser Cys Pro Pro Met Gln Ser  Phe Asp Pro Ala Lys  Leu Leu Thr
    1190                1195                1200

gac tct ggg aag ctg cag aca  ctt gat ata tta ttg  aag cgg ctt        3654
Asp Ser Gly Lys Leu Gln Thr  Leu Asp Ile Leu Leu  Lys Arg Leu
    1205                1210                1215

cga gct gga aat cac agg gtg  ctc ctg ttt gca caa  atg aca aag        3699
Arg Ala Gly Asn His Arg Val  Leu Leu Phe Ala Gln  Met Thr Lys
    1220                1225                1230

atg ctg aac att ctc gag gat  tat atg aac tat aga  aag tac aag        3744
Met Leu Asn Ile Leu Glu Asp  Tyr Met Asn Tyr Arg  Lys Tyr Lys
    1235                1240                1245

tac ctc agg ctt gat gga tcc  tcc acc atc atg gat  cgc cga gat        3789
Tyr Leu Arg Leu Asp Gly Ser  Ser Thr Ile Met Asp  Arg Arg Asp
    1250                1255                1260

atg gtt agg gat ttt cag cat  agg agc gat att ttt  gta ttc ttg        3834
Met Val Arg Asp Phe Gln His  Arg Ser Asp Ile Phe  Val Phe Leu
    1265                1270                1275

ctg agc acc aga gct gga gga  ctt ggt atc aac ttg  acg gct gca        3879
Leu Ser Thr Arg Ala Gly Gly  Leu Gly Ile Asn Leu  Thr Ala Ala
    1280                1285                1290

gac act gtc att ttc tat gaa  agt gat tgg aat ccc  acc ttg gat        3924
Asp Thr Val Ile Phe Tyr Glu  Ser Asp Trp Asn Pro  Thr Leu Asp
    1295                1300                1305

tta caa gct atg gac agg gct  cat cgt ctt gga cag  aca aaa gat        3969
Leu Gln Ala Met Asp Arg Ala  His Arg Leu Gly Gln  Thr Lys Asp
    1310                1315                1320

gtt act gtt tat cgt ctc atc  tgt aag gag acg gtg  gaa gag aaa        4014
Val Thr Val Tyr Arg Leu Ile  Cys Lys Glu Thr Val  Glu Glu Lys
    1325                1330                1335

att ttg cac agg gca agt cag  aaa aat aca gtt caa  cag ctt gtt        4059
Ile Leu His Arg Ala Ser Gln  Lys Asn Thr Val Gln  Gln Leu Val
    1340                1345                1350

atg act gga ggg cat gtt cag  ggt gat gat ttt ctt  gga gct gcg        4104
Met Thr Gly Gly His Val Gln  Gly Asp Asp Phe Leu  Gly Ala Ala
    1355                1360                1365

gat gtg gta tct ctg cta atg  gat gat gcg gag gca  gca caa ctg        4149
Asp Val Val Ser Leu Leu Met  Asp Asp Ala Glu Ala  Ala Gln Leu
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gag cag  aaa ttc aga gaa cta  cca tta cag gta aag  gac agg cag        4194
Glu Gln  Lys Phe Arg Glu Leu  Pro Leu Gln Val Lys  Asp Arg Gln
        1385                        1390                        1395

aag aaa  aag acg aaa cgt atc  aga ata gat gct gaa  gga gat gca        4239
Lys Lys  Lys Thr Lys Arg Ile  Arg Ile Asp Ala Glu  Gly Asp Ala
        1400                        1405                        1410

act ttg  gaa gag tta gaa gat  gtt gac cga cag gat  aac gga cag        4284
Thr Leu  Glu Glu Leu Glu Asp  Val Asp Arg Gln Asp  Asn Gly Gln
        1415                        1420                        1425

gaa cct  ttg gaa gaa ccg gaa  aag cca aaa tcc agt  aat aaa aag        4329
Glu Pro  Leu Glu Glu Pro Glu  Lys Pro Lys Ser Ser  Asn Lys Lys
        1430                        1435                        1440

agg aga  gct gct tca aat ccg  aaa gct aga gct cct  cag aaa gca        4374
Arg Arg  Ala Ala Ser Asn Pro  Lys Ala Arg Ala Pro  Gln Lys Ala
        1445                        1450                        1455

aag gaa  gaa gca aat ggt gaa  gat act cct cag agg  aca aaa agg        4419
Lys Glu  Glu Ala Asn Gly Glu  Asp Thr Pro Gln Arg  Thr Lys Arg
        1460                        1465                        1470

gta aag  aga caa aca aag agc  ata aac gaa agt ctt  gaa cct gta        4464
Val Lys  Arg Gln Thr Lys Ser  Ile Asn Glu Ser Leu  Glu Pro Val
        1475                        1480                        1485

ttc tct  gcc tct gta aca gaa  tca aat aaa gga ttc  gat cca agt        4509
Phe Ser  Ala Ser Val Thr Glu  Ser Asn Lys Gly Phe  Asp Pro Ser
        1490                        1495                        1500

agc tcc  gct aac taa                                                  4524
Ser Ser  Ala Asn
        1505
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Glu Val Asp Tyr Tyr Gly Ser Ser Ser Gln Asp Glu Ser Arg Ser Thr
        35                  40                  45

Gln Gly Gly Val Val Ala Asn Tyr Ser Asn Gly Ser Lys Ser Arg Met
    50                  55                  60
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Asn Ala Ser Ser Lys Lys Arg Lys Arg Trp Thr Glu Ala Glu Asp Ala
65   70   75   80

Glu Asp Asp Asp Asp Leu Tyr Asn Gln His Val Thr Glu Glu His Tyr
                85   90   95

Arg Ser Met Leu Gly Glu His Val Gln Lys Phe Lys Asn Arg Ser Lys
            100   105   110

Glu Thr Gln Gly Asn Pro Pro His Leu Met Gly Phe Pro Val Leu Lys
            115   120   125

Ser Asn Val Gly Ser Tyr Arg Gly Arg Lys Pro Gly Asn Asp Tyr His
    130   135   140

Gly Arg Phe Tyr Asp Met Asp Asn Ser Pro Asn Phe Ala Ala Asp Val
145   150   155   160

Thr Pro His Arg Arg Gly Ser Tyr His Asp Arg Asp Ile Thr Pro Lys
            165   170   175

Ile Ala Tyr Glu Pro Ser Tyr Leu Asp Ile Gly Asp Gly Val Ile Tyr
            180   185   190

Lys Ile Pro Pro Ser Tyr Asp Lys Leu Val Ala Ser Leu Asn Leu Pro
            195   200   205

Ser Phe Ser Asp Ile His Val Glu Glu Phe Tyr Leu Lys Gly Thr Leu
    210   215   220

Asp Leu Arg Ser Leu Ala Glu Leu Met Ala Ser Asp Lys Arg Ser Gly
225   230   235   240

Val Arg Ser Arg Asn Gly Met Gly Glu Pro Arg Pro Gln Tyr Glu Ser
            245   250   255

Leu Gln Ala Arg Met Lys Ala Leu Ser Pro Ser Asn Ser Thr Pro Asn
            260   265   270

Phe Ser Leu Lys Val Ser Glu Ala Ala Met Asn Ser Ala Ile Pro Glu
            275   280   285

Gly Ser Ala Gly Ser Thr Ala Arg Thr Ile Leu Ser Glu Gly Gly Val
    290   295   300

Leu Gln Val His Tyr Val Lys Ile Leu Glu Lys Gly Asp Thr Tyr Glu
305   310   315   320

Ile Val Lys Arg Ser Leu Pro Lys Lys Leu Lys Ala Lys Asn Asp Pro

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                    325                 330                 335

      Ala Val Ile Glu Lys Thr Glu Arg Asp Lys Ile Arg Lys Ala Trp Ile
                  340                 345                 350

      Asn Ile Val Arg Arg Asp Ile Ala Lys His His Arg Ile Phe Thr Thr
                  355                 360                 365

      Phe His Arg Lys Leu Ser Ile Asp Ala Lys Arg Phe Ala Asp Gly Cys
              370                 375                 380

      Gln Arg Glu Val Arg Met Lys Val Gly Arg Ser Tyr Lys Ile Pro Arg
      385                 390                 395                 400

      Thr Ala Pro Ile Arg Thr Arg Lys Ile Ser Arg Asp Met Leu Leu Phe
                      405                 410                 415

      Trp Lys Arg Tyr Asp Lys Gln Met Ala Glu Glu Arg Lys Lys Gln Glu
                  420                 425                 430

      Lys Glu Ala Ala Glu Ala Phe Lys Arg Glu Gln Glu Gln Arg Glu Ser
                  435                 440                 445

      Lys Arg Gln Gln Gln Arg Leu Asn Phe Leu Ile Lys Gln Thr Glu Leu
          450                 455                 460

      Tyr Ser His Phe Met Gln Asn Lys Thr Asp Ser Asn Pro Ser Glu Ala
      465                 470                 475                 480

      Leu Pro Ile Gly Asp Glu Asn Pro Ile Asp Glu Val Leu Pro Glu Thr
                      485                 490                 495

      Ser Ala Ala Glu Pro Ser Glu Val Glu Asp Pro Glu Glu Ala Glu Leu
                  500                 505                 510

      Lys Glu Lys Val Leu Arg Ala Ala Gln Asp Ala Val Ser Lys Gln Lys
                  515                 520                 525

      Gln Ile Thr Asp Ala Phe Asp Thr Glu Tyr Met Lys Leu Arg Gln Thr
          530                 535                 540

      Ser Glu Met Glu Gly Pro Leu Asn Asp Ile Ser Val Ser Gly Ser Ser
      545                 550                 555                 560

      Asn Ile Asp Leu His Asn Pro Ser Thr Met Pro Val Thr Ser Thr Val
                      565                 570                 575

      Gln Thr Pro Glu Leu Phe Lys Gly Thr Leu Lys Glu Tyr Gln Met Lys
                  580                 585                 590
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Gly Leu Gln Trp Leu Val Asn Cys Tyr Glu Gln Gly Leu Asn Gly Ile
        595   600   605

Leu Ala Asp Glu Met Gly Leu Gly Lys Thr Ile Gln Ala Met Ala Phe
        610   615   620

Leu Ala His Leu Ala Glu Glu Lys Asn Ile Trp Gly Pro Phe Leu Val
625   630   635   640

Val Ala Pro Ala Ser Val Leu Asn Asn Trp Ala Asp Glu Ile Ser Arg
                645   650   655

Phe Cys Pro Asp Leu Lys Thr Leu Pro Tyr Trp Gly Gly Leu Gln Glu
            660   665   670

Arg Thr Ile Leu Arg Lys Asn Ile Asn Pro Lys Arg Met Tyr Arg Arg
        675   680   685

Asp Ala Gly Phe His Ile Leu Ile Thr Ser Tyr Gln Leu Leu Val Thr
690   695   700

Asp Glu Lys Tyr Phe Arg Arg Val Lys Trp Gln Tyr Met Val Leu Asp
705   710   715   720

Glu Ala Gln Ala Ile Lys Ser Ser Ser Ser Ile Arg Trp Lys Thr Leu
            725   730   735

Leu Ser Phe Asn Cys Arg Asn Arg Leu Leu Leu Thr Gly Thr Pro Ile
            740   745   750

Gln Asn Asn Met Ala Glu Leu Trp Ala Leu Leu His Phe Ile Met Pro
        755   760   765

Met Leu Phe Asp Asn His Asp Gln Phe Asn Glu Trp Phe Ser Lys Gly
    770   775   780

Ile Glu Asn His Ala Glu His Gly Gly Thr Leu Asn Glu His Gln Leu
785   790   795   800

Asn Arg Leu His Ala Ile Leu Lys Pro Phe Met Leu Arg Arg Val Lys
            805   810   815

Lys Asp Val Val Ser Glu Leu Thr Thr Lys Thr Glu Val Thr Val His
        820   825   830

Cys Lys Leu Ser Ser Arg Gln Gln Ala Phe Tyr Gln Ala Ile Lys Asn
        835   840   845

Lys Ile Ser Leu Ala Glu Leu Phe Asp Ser Asn Arg Gly Gln Phe Thr

                850   855   860

Asp Lys Lys Val Leu Asn Leu Met Asn Ile Val Ile Gln Leu Arg Lys
865   870   875   880

Val Cys Asn His Pro Glu Leu Phe Glu Arg Asn Glu Gly Ser Ser Tyr
                885   890   895

Leu Tyr Phe Gly Val Thr Ser Asn Ser Leu Leu Pro His Pro Phe Gly
            900   905   910

Glu Leu Glu Asp Val His Tyr Ser Gly Gly Gln Asn Pro Ile Ile Tyr
    915   920   925

Lys Ile Pro Lys Leu Leu His Gln Glu Val Leu Gln Asn Ser Glu Thr
    930   935   940

Phe Cys Ser Ser Val Gly Arg Gly Ile Ser Arg Glu Ser Phe Leu Lys
945   950   955   960

His Phe Asn Ile Tyr Ser Pro Glu Tyr Ile Leu Lys Ser Ile Phe Pro
                965   970   975

Ser Asp Ser Gly Val Asp Gln Val Val Ser Gly Ser Gly Ala Phe Gly
            980   985   990

Phe Ser Arg Leu Met Asp Leu Ser Pro Ser Glu Val Gly Tyr Leu Ala
        995   1000   1005

Leu Cys Ser Val Ala Glu Arg Leu Leu Phe Ser Ile Leu Arg Trp
    1010   1015   1020

Glu Arg Gln Phe Leu Asp Glu Leu Val Asn Ser Leu Met Glu Ser
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Lys Asp Gly Asp Leu Ser Asp Asn Asn Ile Glu Arg Val Lys Thr
    1040   1045   1050

Lys Ala Val Thr Arg Met Leu Leu Met Pro Ser Lys Val Glu Thr
    1055   1060   1065

Asn Phe Gln Lys Arg Arg Leu Ser Thr Gly Pro Thr Arg Pro Ser
    1070   1075   1080

Phe Glu Ala Leu Val Ile Ser His Gln Asp Arg Phe Leu Ser Ser
    1085   1090   1095

Ile Lys Leu Leu His Ser Ala Tyr Thr Tyr Ile Pro Lys Ala Arg
    1100   1105   1110

Ala Pro Pro Val Ser Ile His Cys Ser Asp Arg Asn Ser Ala Tyr
    1115   1120   1125

Arg Val Thr Glu Glu Leu His Gln Pro Trp Leu Lys Arg Leu Leu
    1130   1135   1140

Ile Gly Phe Ala Arg Thr Ser Glu Ala Asn Gly Pro Arg Lys Pro
    1145   1150   1155

Asn Ser Phe Pro His Pro Leu Ile Gln Glu Ile Asp Ser Glu Leu
    1160   1165   1170

Pro Val Val Gln Pro Ala Leu Gln Leu Thr His Arg Ile Phe Gly
    1175   1180   1185

Ser Cys Pro Pro Met Gln Ser Phe Asp Pro Ala Lys Leu Leu Thr
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Asp Ser Gly Lys Leu Gln Thr Leu Asp Ile Leu Leu Lys Arg Leu
    1205   1210   1215

Arg Ala Gly Asn His Arg Val Leu Leu Phe Ala Gln Met Thr Lys
    1220   1225   1230

Met Leu Asn Ile Leu Glu Asp Tyr Met Asn Tyr Arg Lys Tyr Lys
    1235   1240   1245

Tyr Leu Arg Leu Asp Gly Ser Ser Thr Ile Met Asp Arg Arg Asp
    1250   1255   1260

Met Val Arg Asp Phe Gln His Arg Ser Asp Ile Phe Val Phe Leu
    1265   1270   1275

Leu Ser Thr Arg Ala Gly Gly Leu Gly Ile Asn Leu Thr Ala Ala
    1280   1285   1290

Asp Thr Val Ile Phe Tyr Glu Ser Asp Trp Asn Pro Thr Leu Asp
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Leu Gln Ala Met Asp Arg Ala His Arg Leu Gly Gln Thr Lys Asp
    1310   1315   1320

Val Thr Val Tyr Arg Leu Ile Cys Lys Glu Thr Val Glu Glu Lys
    1325   1330   1335

Ile Leu His Arg Ala Ser Gln Lys Asn Thr Val Gln Gln Leu Val
    1340   1345   1350

Met Thr Gly Gly His Val Gln Gly Asp Asp Phe Leu Gly Ala Ala

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        Glu Gln  Lys Phe Arg Glu Leu  Pro Leu Gln Val Lys  Asp Arg Gln
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        Lys Lys  Lys Thr Lys Arg Ile  Arg Ile Asp Ala Glu  Gly Asp Ala
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        Thr Leu  Glu Glu Leu Glu Asp  Val Asp Arg Gln Asp  Asn Gly Gln
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        Glu Pro  Leu Glu Glu Pro Glu  Lys Pro Lys Ser Ser  Asn Lys Lys
            1430                   1435               1440


        Arg Arg  Ala Ala Ser Asn Pro  Lys Ala Arg Ala Pro  Gln Lys Ala
            1445                   1450               1455


        Lys Glu  Glu Ala Asn Gly Glu  Asp Thr Pro Gln Arg  Thr Lys Arg
            1460                   1465               1470


        Val Lys  Arg Gln Thr Lys Ser  Ile Asn Glu Ser Leu  Glu Pro Val
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        Phe Ser  Ala Ser Val Thr Glu  Ser Asn Lys Gly Phe  Asp Pro Ser
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        aaatcgagaa tgaatgcgag ctccaagaag agaaagcggt ggacagaagc tgaggatgca    240

        gaggacgatg atgatctcta caatcaacat gttactgagg agcactaccg atcaatgctt    300

        ggggagcatg tacaaaaatt caaaaatagg tccaaggaga ctcaagggaa tcctcctcat    360
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gcaatgaatt ctgccattcc agaaggatct gctggaagta ctgcacggac aattctgtct    900

gagggtggtg ttttacaggt ccattacgtg aagattctgg agaaggggga tacatacgag    960

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aaacaccata gaattttcac tacttttcat cgtaaactat caattgatgc caagaggttt   1140

gcagatggtt gccaaagaga ggtgagaatg aaggtgggta gatcatacaa aatcccaaga   1200

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caagatgcgg tgtctaagca gaagcaaata acagatgcat ttgacactga atatatgaag   1620

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gctatggcgt tcttggcaca tttggctgag gaaaagaaca tttggggtcc atttcttgtt   1920

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<213> Arabidopsis thaliana

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1               5                   10                  15

cgg att gct act cac acc cat atc aaa ggc ctt ggc ctc gag cca act     96
Arg Ile Ala Thr His Thr His Ile Lys Gly Leu Gly Leu Glu Pro Thr
                20                  25                  30

ggt atc cct ata aaa ttg gca gct gga ttt gtt ggt caa ctt gag gct    144
Gly Ile Pro Ile Lys Leu Ala Ala Gly Phe Val Gly Gln Leu Glu Ala
            35                  40                  45

aga gag gca gct ggt ctt gta gtt gac atg att aag cag aag aaa atg    192
Arg Glu Ala Ala Gly Leu Val Val Asp Met Ile Lys Gln Lys Lys Met
        50                  55                  60

gcg ggc aag gct ctt ttg ctt gct gga cct cct gga act ggg aaa aca    240
Ala Gly Lys Ala Leu Leu Leu Ala Gly Pro Pro Gly Thr Gly Lys Thr
65                  70                  75                  80

gct ttg gct ctt gga atc tct caa gag ctg gga agc aag gtt cca ttc    288
Ala Leu Ala Leu Gly Ile Ser Gln Glu Leu Gly Ser Lys Val Pro Phe
                85                  90                  95

tgt cca atg gtt gga tct gag gtt tac tca tca gag gtt aag aaa aca    336
Cys Pro Met Val Gly Ser Glu Val Tyr Ser Ser Glu Val Lys Lys Thr
                100                 105                 110

gag gtt ctc atg gag aat ttt aga cgt gcc att ggt cta cgt atc aag    384
Glu Val Leu Met Glu Asn Phe Arg Arg Ala Ile Gly Leu Arg Ile Lys
            115                 120                 125

gaa acc aaa gaa gtc tat gaa ggg gag gtc acc gag ctg tca cca gaa    432
Glu Thr Lys Glu Val Tyr Glu Gly Glu Val Thr Glu Leu Ser Pro Glu
        130                 135                 140

gaa act gaa agc ctc act gga ggt tat ggt aaa agc atc agc cat gtt    480
Glu Thr Glu Ser Leu Thr Gly Gly Tyr Gly Lys Ser Ile Ser His Val
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          145                     150                     155                     160
     gta att aca ctc aag aca gtc aaa gga acc aaa cat ctg aaa ttg gat        528
     Val Ile Thr Leu Lys Thr Val Lys Gly Thr Lys His Leu Lys Leu Asp
                     165                     170                     175

     ccc act atc tat gat gcc ttg att aag gaa aag gta gct gta gga gat        576
     Pro Thr Ile Tyr Asp Ala Leu Ile Lys Glu Lys Val Ala Val Gly Asp
                     180                     185                     190

     gta atc tat atc gaa gca aac agt gga gct gtc aaa cgg gta ggt aga        624
     Val Ile Tyr Ile Glu Ala Asn Ser Gly Ala Val Lys Arg Val Gly Arg
                     195                     200                     205

     agt gat gct ttt gcc act gaa ttt gat ctg gaa gca gaa gaa tat gtt        672
     Ser Asp Ala Phe Ala Thr Glu Phe Asp Leu Glu Ala Glu Glu Tyr Val
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     cca ctt ccc aaa gga gag gtc cac aaa aag aaa gag ata gtg cag gat        720
     Pro Leu Pro Lys Gly Glu Val His Lys Lys Lys Glu Ile Val Gln Asp
     225                     230                     235                     240

     gtc aca ctc caa gat ctg gat gca gca aat gct cga cct caa ggt ggc        768
     Val Thr Leu Gln Asp Leu Asp Ala Ala Asn Ala Arg Pro Gln Gly Gly
                     245                     250                     255

     cag gat ata ctt tct ttg atg ggc caa atg atg aaa ccg cgg aag act        816
     Gln Asp Ile Leu Ser Leu Met Gly Gln Met Met Lys Pro Arg Lys Thr
                     260                     265                     270

     gag atc act gat aag ctt cgg caa gaa att aac aag gtt gtg aac cga        864
     Glu Ile Thr Asp Lys Leu Arg Gln Glu Ile Asn Lys Val Val Asn Arg
                     275                     280                     285

     tat ata gat gaa ggt gtg gca gag ctt gtt cca gga gtt cta ttt att        912
     Tyr Ile Asp Glu Gly Val Ala Glu Leu Val Pro Gly Val Leu Phe Ile
             290                     295                     300

     gat gag gtt cat atg ctt gat atg gag tgc ttc tca tac ttg aac cgt        960
     Asp Glu Val His Met Leu Asp Met Glu Cys Phe Ser Tyr Leu Asn Arg
     305                     310                     315                     320

     gct ctt gag agc tca tta tct ccg ata gtg ata ttt gca aca aat aga        1008
     Ala Leu Glu Ser Ser Leu Ser Pro Ile Val Ile Phe Ala Thr Asn Arg
                     325                     330                     335

     ggt gtt tgc aac gta aga ggg act gat atg ccc agc ccc cat gga gtc        1056
     Gly Val Cys Asn Val Arg Gly Thr Asp Met Pro Ser Pro His Gly Val
                     340                     345                     350

     cct att gat cta tta gat cga ttg gtt atc atc cgg act caa atc tat        1104
     Pro Ile Asp Leu Leu Asp Arg Leu Val Ile Ile Arg Thr Gln Ile Tyr
                     355                     360                     365

     gat ccc tct gaa atg atc cag att ata gcc att cgt gcg caa gtt gaa        1152
     Asp Pro Ser Glu Met Ile Gln Ile Ile Ala Ile Arg Ala Gln Val Glu
             370                     375                     380

     gaa tta acc gtg gat gaa gaa tgc ttg gtt cta ctt ggg gag att ggg        1200
     Glu Leu Thr Val Asp Glu Glu Cys Leu Val Leu Leu Gly Glu Ile Gly
     385                     390                     395                     400

     caa aga act tca cta agg cac gct gtg cag ctt ctg tct cct gcc agc        1248
     Gln Arg Thr Ser Leu Arg His Ala Val Gln Leu Leu Ser Pro Ala Ser
                     405                     410                     415
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att gta gcg aaa atg aat ggc cgt gac aat att tgc aag gct gat ata      1296
Ile Val Ala Lys Met Asn Gly Arg Asp Asn Ile Cys Lys Ala Asp Ile
            420             425             430

gag gaa gta aca tca ctc tac ttg gat gct aaa tct tca gca aag ctt      1344
Glu Glu Val Thr Ser Leu Tyr Leu Asp Ala Lys Ser Ser Ala Lys Leu
            435             440             445

ttg cat gag caa caa gaa aaa tac atc tca tga                          1377
Leu His Glu Gln Gln Glu Lys Tyr Ile Ser
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<212> PRT

<213> Arabidopsis thaliana

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            20                  25                  30

Gly Ile Pro Ile Lys Leu Ala Ala Gly Phe Val Gly Gln Leu Glu Ala
        35                  40                  45

Arg Glu Ala Ala Gly Leu Val Val Asp Met Ile Lys Gln Lys Lys Met
        50                  55                  60

Ala Gly Lys Ala Leu Leu Leu Ala Gly Pro Pro Gly Thr Gly Lys Thr
65                  70                  75                  80

Ala Leu Ala Leu Gly Ile Ser Gln Glu Leu Gly Ser Lys Val Pro Phe
                85                  90                  95

Cys Pro Met Val Gly Ser Glu Val Tyr Ser Ser Glu Val Lys Lys Thr
            100                 105                 110

Glu Val Leu Met Glu Asn Phe Arg Arg Ala Ile Gly Leu Arg Ile Lys
            115                 120                 125

Glu Thr Lys Glu Val Tyr Glu Gly Glu Val Thr Glu Leu Ser Pro Glu
            130                 135                 140

Glu Thr Glu Ser Leu Thr Gly Gly Tyr Gly Lys Ser Ile Ser His Val
145                 150                 155                 160

Val Ile Thr Leu Lys Thr Val Lys Gly Thr Lys His Leu Lys Leu Asp
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Pro Thr Ile Tyr Asp Ala Leu Ile Lys Glu Lys Val Ala Val Gly Asp
            180                     185                     190

Val Ile Tyr Ile Glu Ala Asn Ser Gly Ala Val Lys Arg Val Gly Arg
            195                     200                     205

Ser Asp Ala Phe Ala Thr Glu Phe Asp Leu Glu Ala Glu Glu Tyr Val
    210                     215                     220

Pro Leu Pro Lys Gly Glu Val His Lys Lys Lys Glu Ile Val Gln Asp
225                     230                     235                     240

Val Thr Leu Gln Asp Leu Asp Ala Ala Asn Ala Arg Pro Gln Gly Gly
                245                     250                     255

Gln Asp Ile Leu Ser Leu Met Gly Gln Met Met Lys Pro Arg Lys Thr
            260                     265                     270

Glu Ile Thr Asp Lys Leu Arg Gln Glu Ile Asn Lys Val Val Asn Arg
            275                     280                     285

Tyr Ile Asp Glu Gly Val Ala Glu Leu Val Pro Gly Val Leu Phe Ile
    290                     295                     300

Asp Glu Val His Met Leu Asp Met Glu Cys Phe Ser Tyr Leu Asn Arg
305                     310                     315                     320

Ala Leu Glu Ser Ser Leu Ser Pro Ile Val Ile Phe Ala Thr Asn Arg
                325                     330                     335

Gly Val Cys Asn Val Arg Gly Thr Asp Met Pro Ser Pro His Gly Val
                340                     345                     350

Pro Ile Asp Leu Leu Asp Arg Leu Val Ile Ile Arg Thr Gln Ile Tyr
    355                     360                     365

Asp Pro Ser Glu Met Ile Gln Ile Ile Ala Ile Arg Ala Gln Val Glu
    370                     375                     380

Glu Leu Thr Val Asp Glu Glu Cys Leu Val Leu Leu Gly Glu Ile Gly
385                     390                     395                     400

Gln Arg Thr Ser Leu Arg His Ala Val Gln Leu Leu Ser Pro Ala Ser
                405                     410                     415

Ile Val Ala Lys Met Asn Gly Arg Asp Asn Ile Cys Lys Ala Asp Ile
                420                     425                     430
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Glu Glu Val Thr Ser Leu Tyr Leu Asp Ala Lys Ser Ser Ala Lys Leu
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Leu His Glu Gln Gln Glu Lys Tyr Ile Ser
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<222> (1)..(1410)

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1               5                   10                  15

cga atc ggc gca cac tca cac atc aga gga cta ggt ctc gac tct gcc          96
Arg Ile Gly Ala His Ser His Ile Arg Gly Leu Gly Leu Asp Ser Ala
                20              25                  30

ctc gag ccg cga gct gtt tcc gaa ggt atg gtc ggt caa gtg aag gcg         144
Leu Glu Pro Arg Ala Val Ser Glu Gly Met Val Gly Gln Val Lys Ala
        35                  40                  45

cgt aaa gcc gcc ggt gta atc ctt cag atg att aga gaa ggg aaa atc         192
Arg Lys Ala Ala Gly Val Ile Leu Gln Met Ile Arg Glu Gly Lys Ile
    50                  55                  60

gcg ggt cgg gct att cta ata gcg ggt caa ccc gga acg ggt aag aca         240
Ala Gly Arg Ala Ile Leu Ile Ala Gly Gln Pro Gly Thr Gly Lys Thr
65                  70                  75                  80

gcg att gca atg ggt atg gcg aaa tct ctt ggc ttg gaa act cct ttt         288
Ala Ile Ala Met Gly Met Ala Lys Ser Leu Gly Leu Glu Thr Pro Phe
                85                  90                  95

gcg atg att gca gga agt gaa att ttc tca tta gag atg tca aag aca         336
Ala Met Ile Ala Gly Ser Glu Ile Phe Ser Leu Glu Met Ser Lys Thr
            100                 105                 110

gaa gct ttg act cag tct ttt cgt aaa gcg att ggt gtt agg atc aaa         384
Glu Ala Leu Thr Gln Ser Phe Arg Lys Ala Ile Gly Val Arg Ile Lys
        115                 120                 125

gaa gag aca gag gtt att gaa gga gaa gtt gtt gag gtt cag att gat         432
Glu Glu Thr Glu Val Ile Glu Gly Glu Val Val Glu Val Gln Ile Asp
    130                 135                 140
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```
agg cct gct tct tct ggt gtt gct tcc aag tca ggg aag atg act atg      480
Arg Pro Ala Ser Ser Gly Val Ala Ser Lys Ser Gly Lys Met Thr Met
145             150              155              160

aaa acg act gat atg gaa act gtg tat gat atg gga gct aag atg att      528
Lys Thr Thr Asp Met Glu Thr Val Tyr Asp Met Gly Ala Lys Met Ile
                165              170              175

gag gct ttg aac aag gag aaa gtg cag agt ggt gat gtt att gcc att      576
Glu Ala Leu Asn Lys Glu Lys Val Gln Ser Gly Asp Val Ile Ala Ile
            180              185              190

gat aaa gct act ggg aag att act aag ctt gga aga tcg ttt tcg agg      624
Asp Lys Ala Thr Gly Lys Ile Thr Lys Leu Gly Arg Ser Phe Ser Arg
        195              200              205

tct cgt gat tat gat gct atg ggt gcg cag acc aag ttt gtg cag tgc      672
Ser Arg Asp Tyr Asp Ala Met Gly Ala Gln Thr Lys Phe Val Gln Cys
    210              215              220

cct gaa ggt gag ttg cag aag agg aaa gag gtt gta cat tgt gtc act      720
Pro Glu Gly Glu Leu Gln Lys Arg Lys Glu Val Val His Cys Val Thr
225              230              235              240

ctt cac gag att gat gtt atc aac agc agg aca caa ggg ttt ctt gcc      768
Leu His Glu Ile Asp Val Ile Asn Ser Arg Thr Gln Gly Phe Leu Ala
            245              250              255

ctt ttc act ggc gat act gga gaa atc cga tca gaa gtc cgg gaa caa      816
Leu Phe Thr Gly Asp Thr Gly Glu Ile Arg Ser Glu Val Arg Glu Gln
            260              265              270

att gat aca aaa gta gct gaa tgg aga gaa gaa gga aaa gca gag ata      864
Ile Asp Thr Lys Val Ala Glu Trp Arg Glu Glu Gly Lys Ala Glu Ile
        275              280              285

gtt ccc gga gtt ctc ttc att gat gaa gtc cac atg ctc gac atc gaa      912
Val Pro Gly Val Leu Phe Ile Asp Glu Val His Met Leu Asp Ile Glu
290              295              300

tgc ttc tca ttc ctt aac cga gct cta gaa aac gaa atg tca cca atc      960
Cys Phe Ser Phe Leu Asn Arg Ala Leu Glu Asn Glu Met Ser Pro Ile
305              310              315              320

ctt gtg gtg gca aca aac cga gga gtg acg aca atc cgt ggc aca aac     1008
Leu Val Val Ala Thr Asn Arg Gly Val Thr Thr Ile Arg Gly Thr Asn
                325              330              335

cag aaa tca cca cac ggg atc ccg att gat ctc ctt gac cgt ctt ctc     1056
Gln Lys Ser Pro His Gly Ile Pro Ile Asp Leu Leu Asp Arg Leu Leu
            340              345              350

atc atc act acc caa cct tac aca gac gat gac ata agg aag ata tta     1104
Ile Ile Thr Thr Gln Pro Tyr Thr Asp Asp Asp Ile Arg Lys Ile Leu
        355              360              365

gaa atc cgt tgc caa gag gaa gac gtt gag atg aac gaa gag gcc aaa     1152
Glu Ile Arg Cys Gln Glu Glu Asp Val Glu Met Asn Glu Glu Ala Lys
370              375              380

cag ctt ttg aca ttg atc gga cgt gat aca tct cta agg tat gcg att     1200
Gln Leu Leu Thr Leu Ile Gly Arg Asp Thr Ser Leu Arg Tyr Ala Ile
385              390              395              400

cat ctt ata acc gca gct gca ttg tca tgc cag aaa cgg aaa ggg aaa     1248
His Leu Ile Thr Ala Ala Ala Leu Ser Cys Gln Lys Arg Lys Gly Lys
```

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                      405                    410                    415
gtc gtg gag gtt gag gat att cag aga gtt tac aga ctg ttc ttg gat    1296
Val Val Glu Val Glu Asp Ile Gln Arg Val Tyr Arg Leu Phe Leu Asp
            420                    425                    430

gtg agg aga tcg atg cag tat ctt gtt gag tat cag agt cag tat atg    1344
Val Arg Arg Ser Met Gln Tyr Leu Val Glu Tyr Gln Ser Gln Tyr Met
            435                    440                    445

ttc agt gaa cca atc aaa aac gat gaa gct gct gca gaa gac gaa caa    1392
Phe Ser Glu Pro Ile Lys Asn Asp Glu Ala Ala Ala Glu Asp Glu Gln
            450                    455                    460

gat gct atg cag atc tga ggatccacct ctgtttgcct tatttatcat          1440
Asp Ala Met Gln Ile
465

gtttcgtggt gatatgtatg attaggatgt tgaactcgga tttatgtttt ttttttttta  1500

agttgtgacg agattcggtt ctagaaaatg atttaaccaa gttcaataca gatcggtttg  1560

gtacaaaaca aaaaaaaaaa aaaa                                         1584


<210>  7

<211>  469

<212>  PRT

<213>  Arabidopsis thaliana


<400>  7

Met Ala Glu Leu Lys Leu Ser Glu Ser Arg Asp Leu Thr Arg Val Glu
1               5               10               15

Arg Ile Gly Ala His Ser His Ile Arg Gly Leu Gly Leu Asp Ser Ala
            20               25               30

Leu Glu Pro Arg Ala Val Ser Glu Gly Met Val Gly Gln Val Lys Ala
        35               40               45

Arg Lys Ala Ala Gly Val Ile Leu Gln Met Ile Arg Glu Gly Lys Ile
    50               55               60

Ala Gly Arg Ala Ile Leu Ile Ala Gly Gln Pro Gly Thr Gly Lys Thr
65               70               75               80

Ala Ile Ala Met Gly Met Ala Lys Ser Leu Gly Leu Glu Thr Pro Phe
                85               90               95

Ala Met Ile Ala Gly Ser Glu Ile Phe Ser Leu Glu Met Ser Lys Thr
            100               105               110

Glu Ala Leu Thr Gln Ser Phe Arg Lys Ala Ile Gly Val Arg Ile Lys
```

```
              115                    120                    125

Glu Glu Thr Glu Val Ile Glu Gly Glu Val Val Glu Val Gln Ile Asp
    130                135                140

Arg Pro Ala Ser Ser Gly Val Ala Ser Lys Ser Gly Lys Met Thr Met
145                150                155                160

Lys Thr Thr Asp Met Glu Thr Val Tyr Asp Met Gly Ala Lys Met Ile
            165                170                175

Glu Ala Leu Asn Lys Glu Lys Val Gln Ser Gly Asp Val Ile Ala Ile
            180                185                190

Asp Lys Ala Thr Gly Lys Ile Thr Lys Leu Gly Arg Ser Phe Ser Arg
        195                200                205

Ser Arg Asp Tyr Asp Ala Met Gly Ala Gln Thr Lys Phe Val Gln Cys
    210                215                220

Pro Glu Gly Glu Leu Gln Lys Arg Lys Glu Val Val His Cys Val Thr
225                230                235                240

Leu His Glu Ile Asp Val Ile Asn Ser Arg Thr Gln Gly Phe Leu Ala
            245                250                255

Leu Phe Thr Gly Asp Thr Gly Glu Ile Arg Ser Glu Val Arg Glu Gln
            260                265                270

Ile Asp Thr Lys Val Ala Glu Trp Arg Glu Glu Gly Lys Ala Glu Ile
        275                280                285

Val Pro Gly Val Leu Phe Ile Asp Glu Val His Met Leu Asp Ile Glu
    290                295                300

Cys Phe Ser Phe Leu Asn Arg Ala Leu Glu Asn Glu Met Ser Pro Ile
305                310                315                320

Leu Val Val Ala Thr Asn Arg Gly Val Thr Thr Ile Arg Gly Thr Asn
            325                330                335

Gln Lys Ser Pro His Gly Ile Pro Ile Asp Leu Leu Asp Arg Leu Leu
            340                345                350

Ile Ile Thr Thr Gln Pro Tyr Thr Asp Asp Asp Ile Arg Lys Ile Leu
        355                360                365

Glu Ile Arg Cys Gln Glu Glu Asp Val Glu Met Asn Glu Glu Ala Lys
370                375                380
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```
Gln Leu Leu Thr Leu Ile Gly Arg Asp Thr Ser Leu Arg Tyr Ala Ile
385               390               395               400

His Leu Ile Thr Ala Ala Ala Leu Ser Cys Gln Lys Arg Lys Gly Lys
              405               410               415

Val Val Glu Val Glu Asp Ile Gln Arg Val Tyr Arg Leu Phe Leu Asp
          420               425               430

Val Arg Arg Ser Met Gln Tyr Leu Val Glu Tyr Gln Ser Gln Tyr Met
      435               440               445

Phe Ser Glu Pro Ile Lys Asn Asp Glu Ala Ala Ala Glu Asp Glu Gln
    450               455               460

Asp Ala Met Gln Ile
465
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<210> 8

<211> 1422

<212> DNA

<213> Arabidopsis thaliana

<220>

<221> CDS

<222> (64)..(1389)

<223>

<400> 8
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cac tca cac ata cga ggt tta ggt ctc gac tca gta ctc gag cca cga   108
    Ser His Ile Arg Gly Leu Gly Leu Asp Ser Val Leu Glu Pro Arg
    1           5                   10                  15

gcc gta tcc gaa gga atg gtt ggt caa atc aaa gca cgt aaa gcc gcc   156
Ala Val Ser Glu Gly Met Val Gly Gln Ile Lys Ala Arg Lys Ala Ala
                20                  25                  30

gga gta acc ctc gag ttg atc aga gac ggc aaa atc tcg ggt cgg gct   204
Gly Val Thr Leu Glu Leu Ile Arg Asp Gly Lys Ile Ser Gly Arg Ala
            35                  40                  45

ata ctt ata gcg ggt caa ccc gga acg ggt aaa atc gca ata gca atg   252
Ile Leu Ile Ala Gly Gln Pro Gly Thr Gly Lys Ile Ala Ile Ala Met
        50                  55                  60

ggt ata gca aaa tca ctt gga caa gaa aca cca ttc act atg att gca   300
Gly Ile Ala Lys Ser Leu Gly Gln Glu Thr Pro Phe Thr Met Ile Ala
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                 65                        70                        75

gga agt gag atc ttt tct tta gag atg tca aag act gaa gct tta act          348
Gly Ser Glu Ile Phe Ser Leu Glu Met Ser Lys Thr Glu Ala Leu Thr
80                  85                  90                  95

caa gct ttt cgt aaa gct att ggt gtt agg atc aaa gaa gag act gac          396
Gln Ala Phe Arg Lys Ala Ile Gly Val Arg Ile Lys Glu Glu Thr Asp
                100                 105                 110

gtg ata gaa gga gaa gtt gtg acg att tcg att gat aga cct gct tct          444
Val Ile Glu Gly Glu Val Val Thr Ile Ser Ile Asp Arg Pro Ala Ser
                115                 120                 125

tct ggt ggt tct gtg aag aag act ggg aag ata aca atg aag acg act          492
Ser Gly Gly Ser Val Lys Lys Thr Gly Lys Ile Thr Met Lys Thr Thr
        130                 135                 140

gat atg gaa tct aat ttt gat ttg gga tgg aaa ttg att gag cca ttg          540
Asp Met Glu Ser Asn Phe Asp Leu Gly Trp Lys Leu Ile Glu Pro Leu
        145                 150                 155

gat aag gag aaa gta cag agt ggt gat gtt att gtt ttg gat agg ttt          588
Asp Lys Glu Lys Val Gln Ser Gly Asp Val Ile Val Leu Asp Arg Phe
160                 165                 170                 175

tgt ggg aag att act aag ctt gga aga tct ttt acg agg tct aga gat          636
Cys Gly Lys Ile Thr Lys Leu Gly Arg Ser Phe Thr Arg Ser Arg Asp
                180                 185                 190

ttt gat gtt atg ggt tca aag act aag ttt gtg cag tgc cct gaa ggt          684
Phe Asp Val Met Gly Ser Lys Thr Lys Phe Val Gln Cys Pro Glu Gly
                195                 200                 205

gag ctt gag aag agg aag gag gtt ttg cat tct gtc aca ctt cat gag          732
Glu Leu Glu Lys Arg Lys Glu Val Leu His Ser Val Thr Leu His Glu
        210                 215                 220

att gat gtt att aat agc agg act caa ggg tat cta gcc ctc ttc aca          780
Ile Asp Val Ile Asn Ser Arg Thr Gln Gly Tyr Leu Ala Leu Phe Thr
225                 230                 235

ggt gat aca ggc gag att cgt tca gaa acc cga gag caa agc gat act          828
Gly Asp Thr Gly Glu Ile Arg Ser Glu Thr Arg Glu Gln Ser Asp Thr
240                 245                 250                 255

aaa gtg gca gag tgg aga gaa gaa ggg aaa gct gaa ata gta cct ggt          876
Lys Val Ala Glu Trp Arg Glu Glu Gly Lys Ala Glu Ile Val Pro Gly
                260                 265                 270

gtt ctc ttc att gat gaa gtc cat atg ctt gat atc gaa tgc ttc tct          924
Val Leu Phe Ile Asp Glu Val His Met Leu Asp Ile Glu Cys Phe Ser
                275                 280                 285

ttc ctg aat aga gct ctc gaa aac gat atg tca cca atc ctg gtc gtg          972
Phe Leu Asn Arg Ala Leu Glu Asn Asp Met Ser Pro Ile Leu Val Val
        290                 295                 300

gct aca aac aga gga atg aca aca atc cga gga aca aac cag ata tca         1020
Ala Thr Asn Arg Gly Met Thr Thr Ile Arg Gly Thr Asn Gln Ile Ser
        305                 310                 315

gca cat ggg atc cca atc gat ttt ctt gac cgt ctt ctt att atc aca         1068
Ala His Gly Ile Pro Ile Asp Phe Leu Asp Arg Leu Leu Ile Ile Thr
320                 325                 330                 335
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aca cag cct tac aca caa gac gag atc aga aat att tta gag atc cgt      1116
Thr Gln Pro Tyr Thr Gln Asp Glu Ile Arg Asn Ile Leu Glu Ile Arg
            340                 345                 350

tgc caa gaa gag gat gtg gag atg aac gag gaa gcg aaa cag ctt ctg      1164
Cys Gln Glu Glu Asp Val Glu Met Asn Glu Glu Ala Lys Gln Leu Leu
            355                 360                 365

act ttg atc gga tgt aat acc tcg ctt agg tac gcg att cat cta atc      1212
Thr Leu Ile Gly Cys Asn Thr Ser Leu Arg Tyr Ala Ile His Leu Ile
            370                 375                 380

aat gca gct gcc cta gct tgc ctg aaa cgt aaa ggg aaa gtc gta gag      1260
Asn Ala Ala Ala Leu Ala Cys Leu Lys Arg Lys Gly Lys Val Val Glu
            385                 390                 395

att cag gac att gag aga gtt tat aga ttg ttt tta gac acc aag aga      1308
Ile Gln Asp Ile Glu Arg Val Tyr Arg Leu Phe Leu Asp Thr Lys Arg
400                 405                 410                 415

tcg atg cag tac ttg gtt gag cat gag agc gag tac ttg ttt agc gtg      1356
Ser Met Gln Tyr Leu Val Glu His Glu Ser Glu Tyr Leu Phe Ser Val
            420                 425                 430

cct ata aaa aac aca cag gag gct act gca gga gaagaaacag aacacgaggc    1409
Pro Ile Lys Asn Thr Gln Glu Ala Thr Ala Gly
            435                 440

catggaagtt tga                                                        1422
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<210> 9

<211> 442

<212> PRT

<213> Arabidopsis thaliana

<400> 9

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Ser His Ile Arg Gly Leu Gly Leu Asp Ser Val Leu Glu Pro Arg Ala
1               5                   10                  15

Val Ser Glu Gly Met Val Gly Gln Ile Lys Ala Arg Lys Ala Ala Gly
            20                  25                  30

Val Thr Leu Glu Leu Ile Arg Asp Gly Lys Ile Ser Gly Arg Ala Ile
            35                  40                  45

Leu Ile Ala Gly Gln Pro Gly Thr Gly Lys Ile Ala Ile Ala Met Gly
        50                  55                  60

Ile Ala Lys Ser Leu Gly Gln Glu Thr Pro Phe Thr Met Ile Ala Gly
65                  70                  75                  80

Ser Glu Ile Phe Ser Leu Glu Met Ser Lys Thr Glu Ala Leu Thr Gln
            85                  90                  95
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Ala Phe Arg Lys Ala Ile Gly Val Arg Ile Lys Glu Glu Thr Asp Val
            100   105   110

Ile Glu Gly Glu Val Val Thr Ile Ser Ile Asp Arg Pro Ala Ser Ser
            115   120   125

Gly Gly Ser Val Lys Lys Thr Gly Lys Ile Thr Met Lys Thr Thr Asp
    130   135   140

Met Glu Ser Asn Phe Asp Leu Gly Trp Lys Leu Ile Glu Pro Leu Asp
145   150   155   160

Lys Glu Lys Val Gln Ser Gly Asp Val Ile Val Leu Asp Arg Phe Cys
            165   170   175

Gly Lys Ile Thr Lys Leu Gly Arg Ser Phe Thr Arg Ser Arg Asp Phe
            180   185   190

Asp Val Met Gly Ser Lys Thr Lys Phe Val Gln Cys Pro Glu Gly Glu
            195   200   205

Leu Glu Lys Arg Lys Glu Val Leu His Ser Val Thr Leu His Glu Ile
    210   215   220

Asp Val Ile Asn Ser Arg Thr Gln Gly Tyr Leu Ala Leu Phe Thr Gly
225   230   235   240

Asp Thr Gly Glu Ile Arg Ser Glu Thr Arg Glu Gln Ser Asp Thr Lys
            245   250   255

Val Ala Glu Trp Arg Glu Glu Gly Lys Ala Glu Ile Val Pro Gly Val
            260   265   270

Leu Phe Ile Asp Glu Val His Met Leu Asp Ile Glu Cys Phe Ser Phe
            275   280   285

Leu Asn Arg Ala Leu Glu Asn Asp Met Ser Pro Ile Leu Val Val Ala
    290   295   300

Thr Asn Arg Gly Met Thr Thr Ile Arg Gly Thr Asn Gln Ile Ser Ala
305   310   315   320

His Gly Ile Pro Ile Asp Phe Leu Asp Arg Leu Leu Ile Ile Thr Thr
            325   330   335

Gln Pro Tyr Thr Gln Asp Glu Ile Arg Asn Ile Leu Glu Ile Arg Cys
            340   345   350

Gln Glu Glu Asp Val Glu Met Asn Glu Glu Ala Lys Gln Leu Leu Thr

```
            355                360                365
```

Leu Ile Gly Cys Asn Thr Ser Leu Arg Tyr Ala Ile His Leu Ile Asn
    370   375   380

Ala Ala Ala Leu Ala Cys Leu Lys Arg Lys Gly Lys Val Val Glu Ile
385   390   395   400

Gln Asp Ile Glu Arg Val Tyr Arg Leu Phe Leu Asp Thr Lys Arg Ser
              405   410   415

Met Gln Tyr Leu Val Glu His Glu Ser Glu Tyr Leu Phe Ser Val Pro
              420   425   430

Ile Lys Asn Thr Gln Glu Ala Thr Ala Gly
        435   440

<210>   10

<211>   1591

<212>   DNA

<213>   Arabidopsis thaliana

<400>   10

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ccacgcgtcc gtaagaagat tttgccagtg cgggaagcgg cggagattga gagattagcg    60
acgatggagg aaagcaaaca gaactatgac ctgacgccac taatagcgcc taacctggac   120
agacacttgg tgtttcctat attcgagttc cttcaagagc gtcagcttta ccctgatgag   180
cagatcctga agtctaaaat ccagcttttg aaccagacga acatggttga ttacgccatg   240
gatattcaca gagtctcta ccacactgaa gacgctcctc aagaaatggt ggagagaaga   300
acagaggttg tcgctaggct caaatctttg gaggaggctg ctgcaccact cgtgtctttt   360
cttttgaacc ctaacgctgt gcaggagcta agagctgaca agcagtacaa tctccaaatg   420
ctcaaggaac gctaccagat tggtccagac cagattgagg ctttgtacca gtacgccaag   480
tttcagtttg aatgtggcaa ctattctggt gctgctgatt atctttacca gtacaggacc   540
ctgtgctcta accttgagag gagtttgagt gccttgtggg gaaagctcgc atctgaaata   600
ttgatgcaaa actgggatat tgctcttgaa gagcttaacc gtctcaaaga gattattgac   660
tcaaagagtt tttcatcgcc gttaaaccag gtgcagaaca ggatttggtt gatgcattgg   720
ggtctgtata tctttttaa ccatgataat ggaaggacac agatcattga tctttttaac   780
caagacaagt atctgaatgc catccaaact agtgctccac acttgctgcg ctacttggca   840
actgctttca ttgtcaacaa aaggagaaga ccacaattga agaattcat taaggtcatt   900
cagcaagagc actactccta caaagatcca attatcgagt tcctggcatg tgtgtttgtc   960
```

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aattatgact ttgatggggc tcaaaagaag atgaaagagt gtgaagaggt cattgtgaat   1020

gatccattcc ttggcaagcg agttgaggat ggaaactttt caactgtacc actgagagat   1080

gaatttcttg aaaatgcccg cctattcgtc tttgaaacct attgcaaaat tcatcaaagg   1140

attgacatgg gggtacttgc tgaaaaattg aatctgaact atgaggaggc cgagagatgg   1200

attgtgaacc taatccgcac ctcaaagctt gatgccaaga ttgattctga gtcaggaact   1260

gtaatcatgg agcctactca gcccaacgtg catgagcagt gataaaacca caccaaaggc   1320

ttatcaggac gaacatacaa gttagtgaat cagctcttgg aacacacaca ggcgcaagca   1380

actcgctagt caaaattttg ctgtggaagc ctttccttga taaaactcac cttcggttga   1440

ctggaattat tttctttttc ttgctctgag ttcacctttt actttgaaaa agattattat   1500

ggagttgttc tatttgaaat gttggatcca cagattggaa cattttccaa ccaaatcagc   1560

attttgtaaa aaaaaaaaaa aaaaaaaaa a                                    1591
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<210> 11

<211> 1773

<212> DNA

<213> Arabidopsis thaliana

<220>

<221> CDS

<222> (1)..(1773)

<223>


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<400> 11
atg gca gaa ctg cta ttt gag act tat gga gtg cct gca gtt gca ttt      48
Met Ala Glu Leu Leu Phe Glu Thr Tyr Gly Val Pro Ala Val Ala Phe
1               5                   10                  15

gga gtc gat gct gct ttc agc tac aaa tac aat caa cta cat gga att      96
Gly Val Asp Ala Ala Phe Ser Tyr Lys Tyr Asn Gln Leu His Gly Ile
                20                  25                  30

tgt aaa aaa gat gga att gtt ctc tgt cct gga ttc acg aca aca cac     144
Cys Lys Lys Asp Gly Ile Val Leu Cys Pro Gly Phe Thr Thr Thr His
            35                  40                  45

tcc att ccg ttt gtc gac gga gaa cct ata tat aaa gga tcc agc cga     192
Ser Ile Pro Phe Val Asp Gly Glu Pro Ile Tyr Lys Gly Ser Ser Arg
        50                  55                  60

act aac att ggt gga tat cat gtc act gat tat tta aag cag ctt ctg     240
Thr Asn Ile Gly Gly Tyr His Val Thr Asp Tyr Leu Lys Gln Leu Leu
65                  70                  75                  80

tca ctt aag tac cct ttt cat tcg tct agg ttt aca tgg gag aag gcc     288
Ser Leu Lys Tyr Pro Phe His Ser Ser Arg Phe Thr Trp Glu Lys Ala
```

```
                   85                      90                      95

gaa gat ttg aaa ttg gaa cac tgt tat atc gca cct gac tat gct tcg        336
Glu Asp Leu Lys Leu Glu His Cys Tyr Ile Ala Pro Asp Tyr Ala Ser
            100                 105                 110

gaa att cgg tta ttc cag gaa gga aga aaa gaa gct gaa gag aaa aca        384
Glu Ile Arg Leu Phe Gln Glu Gly Arg Lys Glu Ala Glu Glu Lys Thr
            115                 120                 125

agt tat tgg cag ctt cca tgg ata cct cct ccc acc gaa gtt cct cca        432
Ser Tyr Trp Gln Leu Pro Trp Ile Pro Pro Pro Thr Glu Val Pro Pro
130                 135                 140

tca gaa gaa gag att gca agg aag gca gct ata aga gaa aaa caa ggt        480
Ser Glu Glu Glu Ile Ala Arg Lys Ala Ala Ile Arg Glu Lys Gln Gly
145                 150                 155                 160

caa agg ctg cga gaa atg gct gaa gca aag aga gtg tcc aag att aat        528
Gln Arg Leu Arg Glu Met Ala Glu Ala Lys Arg Val Ser Lys Ile Asn
                165                 170                 175

gac atg gag aat caa ctg att agc ttg cgt ttc ctt ttg aag caa gtt        576
Asp Met Glu Asn Gln Leu Ile Ser Leu Arg Phe Leu Leu Lys Gln Val
            180                 185                 190

gac cag gtt gaa gag gat gat att cca acc ttt ttg tca gac acc ggt        624
Asp Gln Val Glu Glu Asp Asp Ile Pro Thr Phe Leu Ser Asp Thr Gly
            195                 200                 205

tac gcg tcc agg caa gag cta gag tct act att acg aaa gtg aca cag        672
Tyr Ala Ser Arg Gln Glu Leu Glu Ser Thr Ile Thr Lys Val Thr Gln
210                 215                 220

tcg ctt aga aaa gca agg ggt gag ccg aag aat gaa cca gct gag tat        720
Ser Leu Arg Lys Ala Arg Gly Glu Pro Lys Asn Glu Pro Ala Glu Tyr
225                 230                 235                 240

gaa gaa aac cct gat tct ctt aat aat gaa aag tat cca ctt atg aat        768
Glu Glu Asn Pro Asp Ser Leu Asn Asn Glu Lys Tyr Pro Leu Met Asn
                245                 250                 255

gtc ccc gat gat att ctt act cct gag cag ctt aag gac aag aag agg        816
Val Pro Asp Asp Ile Leu Thr Pro Glu Gln Leu Lys Asp Lys Lys Arg
                260                 265                 270

caa atg ttt ctt aaa aca aca gca gag ggc cgg cta cga gct aga caa        864
Gln Met Phe Leu Lys Thr Thr Ala Glu Gly Arg Leu Arg Ala Arg Gln
            275                 280                 285

aag cgt aat gag gag gaa ctc gaa aaa gag aaa aga aat caa tta gag        912
Lys Arg Asn Glu Glu Glu Leu Glu Lys Glu Lys Arg Asn Gln Leu Glu
            290                 295                 300

gag gaa aga cgt cgt gag aac cca gag tct tac tta gag gag ttg caa        960
Glu Glu Arg Arg Arg Glu Asn Pro Glu Ser Tyr Leu Glu Glu Leu Gln
305                 310                 315                 320

gct cag tac aag gaa gtg ttg gag aga gtt gag cag aag aag cgt ctg       1008
Ala Gln Tyr Lys Glu Val Leu Glu Arg Val Glu Gln Lys Lys Arg Leu
                325                 330                 335

aaa aca aac ggg tcc agt aac ggg aat aac aag tct gga ggt att ggg       1056
Lys Thr Asn Gly Ser Ser Asn Gly Asn Asn Lys Ser Gly Gly Ile Gly
            340                 345                 350
```

```
cga ggc gag cga ctc agt gct gca cag agg gag aga atg cgt ctg ctg    1104
Arg Gly Glu Arg Leu Ser Ala Ala Gln Arg Glu Arg Met Arg Leu Leu
        355             360             365

acg aca gca gcc ttt gat aga ggg aaa ggc gag gat acg ttt ggt tct    1152
Thr Thr Ala Ala Phe Asp Arg Gly Lys Gly Glu Asp Thr Phe Gly Ser
    370             375             380

aga gat gaa gat tgg cag ctc tac aaa ctt atg agc aag gat aat gac    1200
Arg Asp Glu Asp Trp Gln Leu Tyr Lys Leu Met Ser Lys Asp Asn Asp
385             390             395             400

gat gat gac gaa caa cct gat tca gac gag gca gag ttg gct cgt tta    1248
Asp Asp Asp Glu Gln Pro Asp Ser Asp Glu Ala Glu Leu Ala Arg Leu
                405             410             415

tca tct aga ctt cag gaa att gat cca aca ttt gtg cag aaa gta gaa    1296
Ser Ser Arg Leu Gln Glu Ile Asp Pro Thr Phe Val Gln Lys Val Glu
            420             425             430

gga gaa ttg agt cag aca tca ggg gag gtg cca cgc gta cgc cca tta    1344
Gly Glu Leu Ser Gln Thr Ser Gly Glu Val Pro Arg Val Arg Pro Leu
        435             440             445

aca gag gaa gac tac aag ata gtg att ggt ata gaa aga ttc cgt tgc    1392
Thr Glu Glu Asp Tyr Lys Ile Val Ile Gly Ile Glu Arg Phe Arg Cys
    450             455             460

cca gag atc ctg ttc cat cca aac ctt att ggt att gac caa gta ggc    1440
Pro Glu Ile Leu Phe His Pro Asn Leu Ile Gly Ile Asp Gln Val Gly
465             470             475             480

tta gac gag atg gct ggc aca tca atc aga agg cta ccg cac gac gag    1488
Leu Asp Glu Met Ala Gly Thr Ser Ile Arg Arg Leu Pro His Asp Glu
                485             490             495

aaa gag tta gag gag agg cta acg agc tcg ata cta atg acg ggc ggg    1536
Lys Glu Leu Glu Glu Arg Leu Thr Ser Ser Ile Leu Met Thr Gly Gly
            500             505             510

tgt agc ctt ctt cca ggg atg aac gag cgg ttg gaa tgt ggg att agg    1584
Cys Ser Leu Leu Pro Gly Met Asn Glu Arg Leu Glu Cys Gly Ile Arg
        515             520             525

atg ata aga cct tgc gga tca ccc att aac gtg gtt aga gct atg gat    1632
Met Ile Arg Pro Cys Gly Ser Pro Ile Asn Val Val Arg Ala Met Asp
    530             535             540

cca gtg ctg gat gca tgg cga gga gca tct gca ttt gct gct aat ttg    1680
Pro Val Leu Asp Ala Trp Arg Gly Ala Ser Ala Phe Ala Ala Asn Leu
545             550             555             560

aac ttc ttg ggg aat gcc ttt act aag atg gat tac gac gag aaa ggt    1728
Asn Phe Leu Gly Asn Ala Phe Thr Lys Met Asp Tyr Asp Glu Lys Gly
                565             570             575

gaa gat tgg ctt aga aat tat caa att cga tac aac tat ttg tga       1773
Glu Asp Trp Leu Arg Asn Tyr Gln Ile Arg Tyr Asn Tyr Leu
            580             585             590
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<210> 12

<211> 590

<212> PRT

<213> Arabidopsis thaliana

<400> 12

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Met Ala Glu Leu Leu Phe Glu Thr Tyr Gly Val Pro Ala Val Ala Phe
1               5                   10                  15

Gly Val Asp Ala Ala Phe Ser Tyr Lys Tyr Asn Gln Leu His Gly Ile
            20              25                  30

Cys Lys Lys Asp Gly Ile Val Leu Cys Pro Gly Phe Thr Thr Thr His
        35              40                  45

Ser Ile Pro Phe Val Asp Gly Glu Pro Ile Tyr Lys Gly Ser Ser Arg
    50              55                  60

Thr Asn Ile Gly Gly Tyr His Val Thr Asp Tyr Leu Lys Gln Leu Leu
65              70              75                  80

Ser Leu Lys Tyr Pro Phe His Ser Ser Arg Phe Thr Trp Glu Lys Ala
            85                  90                  95

Glu Asp Leu Lys Leu Glu His Cys Tyr Ile Ala Pro Asp Tyr Ala Ser
            100             105             110

Glu Ile Arg Leu Phe Gln Glu Gly Arg Lys Glu Ala Glu Glu Lys Thr
        115             120             125

Ser Tyr Trp Gln Leu Pro Trp Ile Pro Pro Thr Glu Val Pro Pro
    130             135             140

Ser Glu Glu Glu Ile Ala Arg Lys Ala Ala Ile Arg Glu Lys Gln Gly
145             150             155             160

Gln Arg Leu Arg Glu Met Ala Glu Ala Lys Arg Val Ser Lys Ile Asn
            165             170             175

Asp Met Glu Asn Gln Leu Ile Ser Leu Arg Phe Leu Leu Lys Gln Val
            180             185             190

Asp Gln Val Glu Glu Asp Asp Ile Pro Thr Phe Leu Ser Asp Thr Gly
        195             200             205

Tyr Ala Ser Arg Gln Glu Leu Glu Ser Thr Ile Thr Lys Val Thr Gln
    210             215             220

Ser Leu Arg Lys Ala Arg Gly Glu Pro Lys Asn Glu Pro Ala Glu Tyr
225             230             235             240
```

Glu Glu Asn Pro Asp Ser Leu Asn Asn Glu Lys Tyr Pro Leu Met Asn
                    245   250   255

Val Pro Asp Asp Ile Leu Thr Pro Glu Gln Leu Lys Asp Lys Lys Arg
            260   265   270

Gln Met Phe Leu Lys Thr Thr Ala Glu Gly Arg Leu Arg Ala Arg Gln
        275   280   285

Lys Arg Asn Glu Glu Glu Leu Glu Lys Glu Lys Arg Asn Gln Leu Glu
    290   295   300

Glu Glu Arg Arg Arg Glu Asn Pro Glu Ser Tyr Leu Glu Glu Leu Gln
305   310   315   320

Ala Gln Tyr Lys Glu Val Leu Glu Arg Val Glu Gln Lys Lys Arg Leu
            325   330   335

Lys Thr Asn Gly Ser Ser Asn Gly Asn Asn Lys Ser Gly Gly Ile Gly
            340   345   350

Arg Gly Glu Arg Leu Ser Ala Ala Gln Arg Glu Arg Met Arg Leu Leu
            355   360   365

Thr Thr Ala Ala Phe Asp Arg Gly Lys Gly Glu Asp Thr Phe Gly Ser
    370   375   380

Arg Asp Glu Asp Trp Gln Leu Tyr Lys Leu Met Ser Lys Asp Asn Asp
385   390   395   400

Asp Asp Asp Glu Gln Pro Asp Ser Asp Glu Ala Glu Leu Ala Arg Leu
            405   410   415

Ser Ser Arg Leu Gln Glu Ile Asp Pro Thr Phe Val Gln Lys Val Glu
            420   425   430

Gly Glu Leu Ser Gln Thr Ser Gly Glu Val Pro Arg Val Arg Pro Leu
            435   440   445

Thr Glu Glu Asp Tyr Lys Ile Val Ile Gly Ile Glu Arg Phe Arg Cys
    450   455   460

Pro Glu Ile Leu Phe His Pro Asn Leu Ile Gly Ile Asp Gln Val Gly
465   470   475   480

Leu Asp Glu Met Ala Gly Thr Ser Ile Arg Arg Leu Pro His Asp Glu
            485   490   495

```
Lys Glu Leu Glu Glu Arg Leu Thr Ser Ser Ile Leu Met Thr Gly Gly
        500         505             510
```

```
Cys Ser Leu Leu Pro Gly Met Asn Glu Arg Leu Glu Cys Gly Ile Arg
        515         520             525
```

```
Met Ile Arg Pro Cys Gly Ser Pro Ile Asn Val Val Arg Ala Met Asp
    530             535             540
```

```
Pro Val Leu Asp Ala Trp Arg Gly Ala Ser Ala Phe Ala Ala Asn Leu
545             550             555             560
```

```
Asn Phe Leu Gly Asn Ala Phe Thr Lys Met Asp Tyr Asp Glu Lys Gly
                565             570             575
```

```
Glu Asp Trp Leu Arg Asn Tyr Gln Ile Arg Tyr Asn Tyr Leu
            580             585             590
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<210> 13

<211> 1416

<212> DNA

<213> Arabidopsis thaliana

<220>

<221> CDS

<222> (1)..(1416)

<223>

<400> 13

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atg atc ctg aag aaa gta tgg gga tcg gtg tgg aac cga tcg aat agt          48
Met Ile Leu Lys Lys Val Trp Gly Ser Val Trp Asn Arg Ser Asn Ser
1               5               10              15
```

```
ggc aag gat ttg gtg aat cat cag aga gcg atc gat gtt cct cct ctg          96
Gly Lys Asp Leu Val Asn His Gln Arg Ala Ile Asp Val Pro Pro Leu
            20              25              30
```

```
tta ttg tct tct tca tcg tct ctt ggt gcg ttt gat cag cta ccg atg         144
Leu Leu Ser Ser Ser Ser Ser Leu Gly Ala Phe Asp Gln Leu Pro Met
            35              40              45
```

```
gat att cta gtc cag ata ctg atg atg atg gag cca aaa gat gct gtg         192
Asp Ile Leu Val Gln Ile Leu Met Met Met Glu Pro Lys Asp Ala Val
    50              55              60
```

```
aaa ttg ggc tta acg tgc aaa gcc tgg aaa tgc gta gct agt ggt aat         240
Lys Leu Gly Leu Thr Cys Lys Ala Trp Lys Cys Val Ala Ser Gly Asn
65              70              75              80
```

```
cgt ctc tgg ata ttt tat ctc cag tgt tct caa gag cca tgg gac tcc         288
```

```
Arg Leu Trp Ile Phe Tyr Leu Gln Cys Ser Gln Glu Pro Trp Asp Ser
            85                  90                  95

att ttc ttc gct gaa act agt ttg cgt tct ggt tat cct ctc cga atg        336
Ile Phe Phe Ala Glu Thr Ser Leu Arg Ser Gly Tyr Pro Leu Arg Met
            100                 105                 110

att tct agt caa tca gga gag ttg tcg ttt atg cac att tat agt cag        384
Ile Ser Ser Gln Ser Gly Glu Leu Ser Phe Met His Ile Tyr Ser Gln
            115                 120                 125

agg gca caa gtt cct ggt tct atc att att gat ggt ggt tct gga tat        432
Arg Ala Gln Val Pro Gly Ser Ile Ile Ile Asp Gly Gly Ser Gly Tyr
    130                 135                 140

tgt aag ttt ggt tgg agc aag tat gcg tct cct tct gga cgt tct gct        480
Cys Lys Phe Gly Trp Ser Lys Tyr Ala Ser Pro Ser Gly Arg Ser Ala
145                 150                 155                 160

act ttt ttg gaa ttt ggt aac att gag tca ccg att tat gct aga ctt        528
Thr Phe Leu Glu Phe Gly Asn Ile Glu Ser Pro Ile Tyr Ala Arg Leu
                165                 170                 175

caa cag ttc ttt gca acc att ttc acc agg atg cag gta aag ccc tct        576
Gln Gln Phe Phe Ala Thr Ile Phe Thr Arg Met Gln Val Lys Pro Ser
            180                 185                 190

atg cag cca ata gtg gta tca cta cct ctc tgc cat ttt gat gat act        624
Met Gln Pro Ile Val Val Ser Leu Pro Leu Cys His Phe Asp Asp Thr
            195                 200                 205

gaa tca gcc aag gca tca agg cgg caa ctt aag act gct att ttc aat        672
Glu Ser Ala Lys Ala Ser Arg Arg Gln Leu Lys Thr Ala Ile Phe Asn
    210                 215                 220

gtc ttg ttt gac atg aac gtc cct gca gtg tgt gca gtt aat cag gct        720
Val Leu Phe Asp Met Asn Val Pro Ala Val Cys Ala Val Asn Gln Ala
225                 230                 235                 240

gtg tta gct cta tat gca gca cgg cgg aca tct gga att gtt gtc aac        768
Val Leu Ala Leu Tyr Ala Ala Arg Arg Thr Ser Gly Ile Val Val Asn
                245                 250                 255

att ggt ttc caa gtc atc acc att ctt ccg att tta cat ggt aag gtg        816
Ile Gly Phe Gln Val Ile Thr Ile Leu Pro Ile Leu His Gly Lys Val
            260                 265                 270

atg cgc cag gta ggt gta gaa gtc att ggt ttt gga gca ttg aaa ctc        864
Met Arg Gln Val Gly Val Glu Val Ile Gly Phe Gly Ala Leu Lys Leu
            275                 280                 285

acg ggc ttc ctt aag gag aag atg caa gaa aac aac att tcc ttt caa        912
Thr Gly Phe Leu Lys Glu Lys Met Gln Glu Asn Asn Ile Ser Phe Gln
    290                 295                 300

tca ctc tac act gtt cgt act ctt aaa gag aaa ctg tgt tat gtg gct        960
Ser Leu Tyr Thr Val Arg Thr Leu Lys Glu Lys Leu Cys Tyr Val Ala
305                 310                 315                 320

ctt gat tat aaa gct gaa ctt tca aaa gac aca caa gct tca gtg gaa        1008
Leu Asp Tyr Lys Ala Glu Leu Ser Lys Asp Thr Gln Ala Ser Val Glu
                325                 330                 335

gtt tca ggt gaa gga tgg ttt act tta tca aaa gag cgt ttc caa aca        1056
Val Ser Gly Glu Gly Trp Phe Thr Leu Ser Lys Glu Arg Phe Gln Thr
            340                 345                 350
```

```
ggg gag ata tta ttc caa cca cgt ctc gct gga atg cgt gca atg agt        1104
Gly Glu Ile Leu Phe Gln Pro Arg Leu Ala Gly Met Arg Ala Met Ser
        355             360             365

ctg cac cag gcc gtc tcg ctc tgt atg gac cac tgt gat gca gca gga        1152
Leu His Gln Ala Val Ser Leu Cys Met Asp His Cys Asp Ala Ala Gly
    370             375             380

ctt aca ggt gac gat agt tgg ttc aag act gta gta cta act ggg gga       1200
Leu Thr Gly Asp Asp Ser Trp Phe Lys Thr Val Val Leu Thr Gly Gly
385             390             395             400

agc gcg tgt ttg cct gga ctc tca gag agg cta gag aga gaa ctg caa        1248
Ser Ala Cys Leu Pro Gly Leu Ser Glu Arg Leu Glu Arg Glu Leu Gln
            405             410             415

gat cac ctt cct tca tct ata agt aac gga atc aga gta ata cct cct        1296
Asp His Leu Pro Ser Ser Ile Ser Asn Gly Ile Arg Val Ile Pro Pro
            420             425             430

cct tac ggc gtg gac aca tca tgg cat ggg gca aag ctt att agt aat        1344
Pro Tyr Gly Val Asp Thr Ser Trp His Gly Ala Lys Leu Ile Ser Asn
            435             440             445

ttg agc atc ttt cct ggt cct tgg tgt atc aca agg aag cag ttc cgt        1392
Leu Ser Ile Phe Pro Gly Pro Trp Cys Ile Thr Arg Lys Gln Phe Arg
    450             455             460

cgc aag tca aga ctc atg tgg tga                                        1416
Arg Lys Ser Arg Leu Met Trp
465             470
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<210> 14

<211> 471

<212> PRT

<213> Arabidopsis thaliana

<400> 14

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Met Ile Leu Lys Lys Val Trp Gly Ser Val Trp Asn Arg Ser Asn Ser
1               5               10              15


Gly Lys Asp Leu Val Asn His Gln Arg Ala Ile Asp Val Pro Pro Leu
            20              25              30


Leu Leu Ser Ser Ser Ser Ser Leu Gly Ala Phe Asp Gln Leu Pro Met
            35              40              45


Asp Ile Leu Val Gln Ile Leu Met Met Met Glu Pro Lys Asp Ala Val
    50              55              60


Lys Leu Gly Leu Thr Cys Lys Ala Trp Lys Cys Val Ala Ser Gly Asn
65              70              75              80
```

Arg Leu Trp Ile Phe Tyr Leu Gln Cys Ser Gln Glu Pro Trp Asp Ser
             85   90   95

Ile Phe Phe Ala Glu Thr Ser Leu Arg Ser Gly Tyr Pro Leu Arg Met
             100   105   110

Ile Ser Ser Gln Ser Gly Glu Leu Ser Phe Met His Ile Tyr Ser Gln
             115   120   125

Arg Ala Gln Val Pro Gly Ser Ile Ile Ile Asp Gly Gly Ser Gly Tyr
    130   135   140

Cys Lys Phe Gly Trp Ser Lys Tyr Ala Ser Pro Ser Gly Arg Ser Ala
145   150   155   160

Thr Phe Leu Glu Phe Gly Asn Ile Glu Ser Pro Ile Tyr Ala Arg Leu
             165   170   175

Gln Gln Phe Phe Ala Thr Ile Phe Thr Arg Met Gln Val Lys Pro Ser
             180   185   190

Met Gln Pro Ile Val Val Ser Leu Pro Leu Cys His Phe Asp Asp Thr
             195   200   205

Glu Ser Ala Lys Ala Ser Arg Arg Gln Leu Lys Thr Ala Ile Phe Asn
    210   215   220

Val Leu Phe Asp Met Asn Val Pro Ala Val Cys Ala Val Asn Gln Ala
225   230   235   240

Val Leu Ala Leu Tyr Ala Ala Arg Arg Thr Ser Gly Ile Val Val Asn
             245   250   255

Ile Gly Phe Gln Val Ile Thr Ile Leu Pro Ile Leu His Gly Lys Val
             260   265   270

Met Arg Gln Val Gly Val Glu Val Ile Gly Phe Gly Ala Leu Lys Leu
    275   280   285

Thr Gly Phe Leu Lys Glu Lys Met Gln Glu Asn Asn Ile Ser Phe Gln
    290   295   300

Ser Leu Tyr Thr Val Arg Thr Leu Lys Glu Lys Leu Cys Tyr Val Ala
305   310   315   320

Leu Asp Tyr Lys Ala Glu Leu Ser Lys Asp Thr Gln Ala Ser Val Glu
             325   330   335

Val Ser Gly Glu Gly Trp Phe Thr Leu Ser Lys Glu Arg Phe Gln Thr
             340   345   350

```
Gly Glu Ile Leu Phe Gln Pro Arg Leu Ala Gly Met Arg Ala Met Ser
        355             360                 365

Leu His Gln Ala Val Ser Leu Cys Met Asp His Cys Asp Ala Ala Gly
    370                 375                 380

Leu Thr Gly Asp Asp Ser Trp Phe Lys Thr Val Val Leu Thr Gly Gly
385                 390                 395                 400

Ser Ala Cys Leu Pro Gly Leu Ser Glu Arg Leu Glu Arg Glu Leu Gln
            405                 410                 415

Asp His Leu Pro Ser Ser Ile Ser Asn Gly Ile Arg Val Ile Pro Pro
            420                 425                 430

Pro Tyr Gly Val Asp Thr Ser Trp His Gly Ala Lys Leu Ile Ser Asn
        435                 440                 445

Leu Ser Ile Phe Pro Gly Pro Trp Cys Ile Thr Arg Lys Gln Phe Arg
    450                 455                 460

Arg Lys Ser Arg Leu Met Trp
465                 470
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<210>   15

<211>   1092

<212>   DNA

<213>   Arabidopsis thaliana

<220>

<221>   CDS

<222>   (1)..(1092)

<223>

<400>   15
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Met Glu Ala Leu Val Val Asp Ala Gly Ser Lys Phe Leu Lys Ala Gly
1               5                   10                  15

gca gca att cct gac cag tct cct gca atg ata att ccc tct caa atg      96
Ala Ala Ile Pro Asp Gln Ser Pro Ala Met Ile Ile Pro Ser Gln Met
            20                  25                  30

aaa cga atg gtt gat gat ggg tct tct tca gct gat aac ccc acc act     144
Lys Arg Met Val Asp Asp Gly Ser Ser Ser Ala Asp Asn Pro Thr Thr
        35                  40                  45
```

```
gtc ttt gag gat gtc act ctt gat cct att gaa agg ggt ttg att aga         192
Val Phe Glu Asp Val Thr Leu Asp Pro Ile Glu Arg Gly Leu Ile Arg
    50                  55              60

gat tgg gat gct atg gaa gat ctg ttg cgt tat gtt gtc tac act ggg         240
Asp Trp Asp Ala Met Glu Asp Leu Leu Arg Tyr Val Val Tyr Thr Gly
65              70              75                  80

ctt gga tgg gaa gag gga aac gaa ggc aat ata ctt ttt aca gat cca         288
Leu Gly Trp Glu Glu Gly Asn Glu Gly Asn Ile Leu Phe Thr Asp Pro
                85                  90                  95

ctt tgt act cct aag gct att agg gag caa ttg gtg cag ttg atg ttt         336
Leu Cys Thr Pro Lys Ala Ile Arg Glu Gln Leu Val Gln Leu Met Phe
                100             105             110

gaa aca ttc aat gtc tct gga ttt tat gca tct gag caa gca gtg ttg         384
Glu Thr Phe Asn Val Ser Gly Phe Tyr Ala Ser Glu Gln Ala Val Leu
            115             120             125

tcc ctt tat gct gtt gga cgc atc tcc ggt tgc act gtt gat att ggt         432
Ser Leu Tyr Ala Val Gly Arg Ile Ser Gly Cys Thr Val Asp Ile Gly
    130             135             140

cat ggg aag ata gat att gcc cca gtt ctt gaa ggt gca gta caa cac         480
His Gly Lys Ile Asp Ile Ala Pro Val Leu Glu Gly Ala Val Gln His
145                 150             155                 160

att gcc tcg aaa cgg ttt gag cta ggt gga acc gag cta act aaa tta         528
Ile Ala Ser Lys Arg Phe Glu Leu Gly Gly Thr Glu Leu Thr Lys Leu
                165             170             175

ttt gcc caa gag ctt gga aaa acc aac ccg tcg atg aat ctc agc atg         576
Phe Ala Gln Glu Leu Gly Lys Thr Asn Pro Ser Met Asn Leu Ser Met
            180             185             190

tct gat gtt gaa aaa ctc aag gag cag tat gca aac tgt gcc gag gac         624
Ser Asp Val Glu Lys Leu Lys Glu Gln Tyr Ala Asn Cys Ala Glu Asp
        195             200             205

gaa att gct tac aaa aaa acc caa aac tgt gaa atc gag cag cat act         672
Glu Ile Ala Tyr Lys Lys Thr Gln Asn Cys Glu Ile Glu Gln His Thr
    210             215             220

ctt cct gat gga cag gtg ata agc atc ggg cga gag aga tac tcg gtt         720
Leu Pro Asp Gly Gln Val Ile Ser Ile Gly Arg Glu Arg Tyr Ser Val
225             230             235                 240

gga gaa gct ctg ttt cag cca tca ata ctg gga ctg gag gag cat gga         768
Gly Glu Ala Leu Phe Gln Pro Ser Ile Leu Gly Leu Glu Glu His Gly
                245             250             255

atc gtt gag cag ctt gtc cgg att atc tcc aca gtg tca tct gag aac         816
Ile Val Glu Gln Leu Val Arg Ile Ile Ser Thr Val Ser Ser Glu Asn
            260             265             270

cat agg cag ctc ttg gag aac act gta ctt tgt ggt ggt aca acc tcc         864
His Arg Gln Leu Leu Glu Asn Thr Val Leu Cys Gly Gly Thr Thr Ser
        275             280             285

atg aca gga ttc gaa agt aga ttc cag aaa gaa gca aac ttg tgc tca         912
Met Thr Gly Phe Glu Ser Arg Phe Gln Lys Glu Ala Asn Leu Cys Ser
290             295             300

tct gcc att agg cca aca ctg gtg aaa ccg cca gaa tat atg ccg gag         960
```

```
Ser Ala Ile Arg Pro Thr Leu Val Lys Pro Pro Glu Tyr Met Pro Glu
305             310             315             320

aat ttg ggg atg tat tcg gct tgg gtt gga gga gcc ata cta gct aaa     1008
Asn Leu Gly Met Tyr Ser Ala Trp Val Gly Gly Ala Ile Leu Ala Lys
                325             330             335

gtg gtg ttt ccg cag aat cag cac gtt act aaa gca gat tat gac gag     1056
Val Val Phe Pro Gln Asn Gln His Val Thr Lys Ala Asp Tyr Asp Glu
                340             345             350

act gga cca tca gtg gtt cac agg aaa tgt ttc tga                     1092
Thr Gly Pro Ser Val Val His Arg Lys Cys Phe
                355             360
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<210> 16

<211> 363

<212> PRT

<213> Arabidopsis thaliana

<400> 16

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Met Glu Ala Leu Val Val Asp Ala Gly Ser Lys Phe Leu Lys Ala Gly
1               5               10              15

Ala Ala Ile Pro Asp Gln Ser Pro Ala Met Ile Ile Pro Ser Gln Met
                20              25              30

Lys Arg Met Val Asp Asp Gly Ser Ser Ser Ala Asp Asn Pro Thr Thr
            35              40              45

Val Phe Glu Asp Val Thr Leu Asp Pro Ile Glu Arg Gly Leu Ile Arg
        50              55              60

Asp Trp Asp Ala Met Glu Asp Leu Leu Arg Tyr Val Val Tyr Thr Gly
65              70              75              80

Leu Gly Trp Glu Glu Gly Asn Glu Gly Asn Ile Leu Phe Thr Asp Pro
                85              90              95

Leu Cys Thr Pro Lys Ala Ile Arg Glu Gln Leu Val Gln Leu Met Phe
            100             105             110

Glu Thr Phe Asn Val Ser Gly Phe Tyr Ala Ser Glu Gln Ala Val Leu
        115             120             125

Ser Leu Tyr Ala Val Gly Arg Ile Ser Gly Cys Thr Val Asp Ile Gly
    130             135             140

His Gly Lys Ile Asp Ile Ala Pro Val Leu Glu Gly Ala Val Gln His
145             150             155             160
```

```
Ile Ala Ser Lys Arg Phe Glu Leu Gly Gly Thr Glu Leu Thr Lys Leu
              165             170             175

Phe Ala Gln Glu Leu Gly Lys Thr Asn Pro Ser Met Asn Leu Ser Met
              180             185             190

Ser Asp Val Glu Lys Leu Lys Glu Gln Tyr Ala Asn Cys Ala Glu Asp
              195             200             205

Glu Ile Ala Tyr Lys Lys Thr Gln Asn Cys Glu Ile Glu Gln His Thr
    210             215             220

Leu Pro Asp Gly Gln Val Ile Ser Ile Gly Arg Glu Arg Tyr Ser Val
225             230             235             240

Gly Glu Ala Leu Phe Gln Pro Ser Ile Leu Gly Leu Glu Glu His Gly
              245             250             255

Ile Val Glu Gln Leu Val Arg Ile Ile Ser Thr Val Ser Ser Glu Asn
              260             265             270

His Arg Gln Leu Leu Glu Asn Thr Val Leu Cys Gly Gly Thr Thr Ser
        275             280             285

Met Thr Gly Phe Glu Ser Arg Phe Gln Lys Glu Ala Asn Leu Cys Ser
    290             295             300

Ser Ala Ile Arg Pro Thr Leu Val Lys Pro Pro Glu Tyr Met Pro Glu
305             310             315             320

Asn Leu Gly Met Tyr Ser Ala Trp Val Gly Gly Ala Ile Leu Ala Lys
              325             330             335

Val Val Phe Pro Gln Asn Gln His Val Thr Lys Ala Asp Tyr Asp Glu
              340             345             350

Thr Gly Pro Ser Val Val His Arg Lys Cys Phe
              355             360
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<210> 17

<211> 1791

<212> DNA

<213> Arabidopsis thaliana

<220>

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<221>   CDS

<222>   (1)..(1791)

<223>


<400>   17
atg gca aaa cca aaa tcc aat tct cat ctc tcg tgg cag gat tac ttg       48
Met Ala Lys Pro Lys Ser Asn Ser His Leu Ser Trp Gln Asp Tyr Leu
1               5                   10                  15

aaa act gtt gcc ccc act cag att ttg tct gaa cga gga gct aat ctc       96
Lys Thr Val Ala Pro Thr Gln Ile Leu Ser Glu Arg Gly Ala Asn Leu
                20                  25                  30

gtt gtc atc aac tta ggg tct gct aat gta aga gta gga ttg gct atg      144
Val Val Ile Asn Leu Gly Ser Ala Asn Val Arg Val Gly Leu Ala Met
        35                  40                  45

gat gag aaa cct ttc aat gtt cct aat tgt att gca aga tac att aca      192
Asp Glu Lys Pro Phe Asn Val Pro Asn Cys Ile Ala Arg Tyr Ile Thr
    50                  55                  60

caa tct ggg aaa cca act gtt gtt gat cag atg ctt aac act gag gtc      240
Gln Ser Gly Lys Pro Thr Val Val Asp Gln Met Leu Asn Thr Glu Val
65                  70                  75                  80

act act aat caa cat gtt gac cgt gag aga gct tat aat tct gcg gca      288
Thr Thr Asn Gln His Val Asp Arg Glu Arg Ala Tyr Asn Ser Ala Ala
                85                  90                  95

tcg ctg ttg aag ata ctg ttc ctg gat gaa agt tct tct tct ggc tct      336
Ser Leu Leu Lys Ile Leu Phe Leu Asp Glu Ser Ser Ser Ser Gly Ser
            100                 105                 110

gca tct cgc aag atg ggg agg atc gac gga tac aat caa gcg agt acg      384
Ala Ser Arg Lys Met Gly Arg Ile Asp Gly Tyr Asn Gln Ala Ser Thr
        115                 120                 125

ata aag aaa gat tca gtc ttt act tgg act gat gtg tat gag gat gag      432
Ile Lys Lys Asp Ser Val Phe Thr Trp Thr Asp Val Tyr Glu Asp Glu
    130                 135                 140

aaa att tct ctt gcc tca cca gca gaa act tct cct gat aaa ggt gat      480
Lys Ile Ser Leu Ala Ser Pro Ala Glu Thr Ser Pro Asp Lys Gly Asp
145                 150                 155                 160

gct agt gca tct gaa gct gtt cct gat gtt act gac tct aaa gat act      528
Ala Ser Ala Ser Glu Ala Val Pro Asp Val Thr Asp Ser Lys Asp Thr
                165                 170                 175

agt gag agt aaa cgc aag tat agg aaa atg att ttt ggt gaa gaa gct      576
Ser Glu Ser Lys Arg Lys Tyr Arg Lys Met Ile Phe Gly Glu Glu Ala
            180                 185                 190

ttg aaa ata tcg cca aaa gag cca tat tgt tta tac cat cct att cgg      624
Leu Lys Ile Ser Pro Lys Glu Pro Tyr Cys Leu Tyr His Pro Ile Arg
        195                 200                 205

aga ggt cac ttc aat gtt tcg cca cat tat tca gcg caa cgg gtt tgt      672
Arg Gly His Phe Asn Val Ser Pro His Tyr Ser Ala Gln Arg Val Cys
    210                 215                 220

gag gac tta act gct atc ttg gac tgg att tta tta gag aaa ctt cat      720
Glu Asp Leu Thr Ala Ile Leu Asp Trp Ile Leu Leu Glu Lys Leu His
```

```
Glu Asp Leu Thr Ala Ile Leu Asp Trp Ile Leu Leu Glu Lys Leu His
225             230             235                 240

ata act cac aag gag aga ttc tct ttt cat gct gtt att gtt gtc cca    768
Ile Thr His Lys Glu Arg Phe Ser Phe His Ala Val Ile Val Val Pro
                245             250             255

gaa aca ttt gac acc cgc gaa ata aag gaa atg cta act att gtg ttg    816
Glu Thr Phe Asp Thr Arg Glu Ile Lys Glu Met Leu Thr Ile Val Leu
                260             265             270

gga gag cta tac ttt aac tca gca gtt gtc cac caa gaa ggt cta tcg    864
Gly Glu Leu Tyr Phe Asn Ser Ala Val Val His Gln Glu Gly Leu Ser
                275             280             285

gcc gtt ttt ggg aat ggt ttg aca aca gct tgt att gtg aat ata gga    912
Ala Val Phe Gly Asn Gly Leu Thr Thr Ala Cys Ile Val Asn Ile Gly
        290             295             300

gcc cag aca agt aca gta gtt tgt gtc gag gat ggg gtc tca ttg cca    960
Ala Gln Thr Ser Thr Val Val Cys Val Glu Asp Gly Val Ser Leu Pro
305             310             315             320

aat act gaa aag att tta cct ttt gga gga gag gat ata tgt aga tgc    1008
Asn Thr Glu Lys Ile Leu Pro Phe Gly Gly Glu Asp Ile Cys Arg Cys
                325             330             335

ctt cta tgg att cag agg cat tac caa aag tgg cca caa atc aac aca    1056
Leu Leu Trp Ile Gln Arg His Tyr Gln Lys Trp Pro Gln Ile Asn Thr
                340             345             350

gat gtt ttg gca aag cca atc gat atg ctg atg ctt aat caa ctt aag    1104
Asp Val Leu Ala Lys Pro Ile Asp Met Leu Met Leu Asn Gln Leu Lys
                355             360             365

gag tca ttt tgt gaa att aga gca gga gaa ctt gaa act gtt gca acg    1152
Glu Ser Phe Cys Glu Ile Arg Ala Gly Glu Leu Glu Thr Val Ala Thr
370             375             380

gtt cat tct tat gag gaa ggc atg cca gct gtg cct cac aag aca aat    1200
Val His Ser Tyr Glu Glu Gly Met Pro Ala Val Pro His Lys Thr Asn
385             390             395             400

ctc acc tcc ctt aac gtt cca cca atg ggt ctg ttt tat cct aac ctt    1248
Leu Thr Ser Leu Asn Val Pro Pro Met Gly Leu Phe Tyr Pro Asn Leu
                405             410             415

ttg gtc cct gaa ata ttt ccc cag cca cca cgt caa tgg ttt caa gac    1296
Leu Val Pro Glu Ile Phe Pro Gln Pro Pro Arg Gln Trp Phe Gln Asp
                420             425             430

tac gag aat atg ttg gaa gac act tgg aac atg gac ttt gga ggt ggt    1344
Tyr Glu Asn Met Leu Glu Asp Thr Trp Asn Met Asp Phe Gly Gly Gly
                435             440             445

ggt aac atg gga tta cca atg tgg gat agt ttt gca ttt tcg cct tca    1392
Gly Asn Met Gly Leu Pro Met Trp Asp Ser Phe Ala Phe Ser Pro Ser
450             455             460

aaa cca aag aaa gaa gag aag att ggt ctc gct gaa gcc att aca agc    1440
Lys Pro Lys Lys Glu Glu Lys Ile Gly Leu Ala Glu Ala Ile Thr Ser
465             470             475             480

agc att ctc tct gct gga cgc ata gac ctt aga cgg aag ctt ttc tcc    1488
Ser Ile Leu Ser Ala Gly Arg Ile Asp Leu Arg Arg Lys Leu Phe Ser
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agc att caa ttg att ggt ggt gct ggt ttg acg aaa ggt ctt gta gcg      1536
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gca gtg gaa gaa aga gtt ctt cac gcg ata cct cca act gaa gcc att      1584
Ala Val Glu Glu Arg Val Leu His Ala Ile Pro Pro Thr Glu Ala Ile
        515             520             525

gat aca gtg cag gtt ctg cca tca aga acg gag cca caa ttc gta act      1632
Asp Thr Val Gln Val Leu Pro Ser Arg Thr Glu Pro Gln Phe Val Thr
        530             535             540

tgg aaa gga gga gcg ata ttg gga att ctg gac ttt ggg agg gag gct      1680
Trp Lys Gly Gly Ala Ile Leu Gly Ile Leu Asp Phe Gly Arg Glu Ala
545             550             555             560

tgg att gag aga cat caa tgg atg gta aat ggg gtt aat aaa ggt ggt      1728
Trp Ile Glu Arg His Gln Trp Met Val Asn Gly Val Asn Lys Gly Gly
            565             570             575

cta aag aag tac aaa gac tct tat cac ctt caa ggt caa gca atg tac      1776
Leu Lys Lys Tyr Lys Asp Ser Tyr His Leu Gln Gly Gln Ala Met Tyr
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Phe Ile Asn Pro
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Val Val Ile Asn Leu Gly Ser Ala Asn Val Arg Val Gly Leu Ala Met
            35                  40                  45


Asp Glu Lys Pro Phe Asn Val Pro Asn Cys Ile Ala Arg Tyr Ile Thr
        50                  55                  60


Gln Ser Gly Lys Pro Thr Val Val Asp Gln Met Leu Asn Thr Glu Val
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Thr Thr Asn Gln His Val Asp Arg Glu Arg Ala Tyr Asn Ser Ala Ala
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Ser Leu Leu Lys Ile Leu Phe Leu Asp Glu Ser Ser Ser Gly Ser
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Ile Lys Lys Asp Ser Val Phe Thr Trp Thr Asp Val Tyr Glu Asp Glu
    130             135             140

Lys Ile Ser Leu Ala Ser Pro Ala Glu Thr Ser Pro Asp Lys Gly Asp
145             150             155             160

Ala Ser Ala Ser Glu Ala Val Pro Asp Val Thr Asp Ser Lys Asp Thr
                165             170             175

Ser Glu Ser Lys Arg Lys Tyr Arg Lys Met Ile Phe Gly Glu Glu Ala
            180             185             190

Leu Lys Ile Ser Pro Lys Glu Pro Tyr Cys Leu Tyr His Pro Ile Arg
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Arg Gly His Phe Asn Val Ser Pro His Tyr Ser Ala Gln Arg Val Cys
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Glu Asp Leu Thr Ala Ile Leu Asp Trp Ile Leu Leu Glu Lys Leu His
225             230             235             240

Ile Thr His Lys Glu Arg Phe Ser Phe His Ala Val Ile Val Val Pro
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Glu Thr Phe Asp Thr Arg Glu Ile Lys Glu Met Leu Thr Ile Val Leu
            260             265             270

Gly Glu Leu Tyr Phe Asn Ser Ala Val Val His Gln Glu Gly Leu Ser
        275             280             285

Ala Val Phe Gly Asn Gly Leu Thr Thr Ala Cys Ile Val Asn Ile Gly
    290             295             300

Ala Gln Thr Ser Thr Val Val Cys Val Glu Asp Gly Val Ser Leu Pro
305             310             315             320

Asn Thr Glu Lys Ile Leu Pro Phe Gly Gly Glu Asp Ile Cys Arg Cys
            325             330             335

Leu Leu Trp Ile Gln Arg His Tyr Gln Lys Trp Pro Gln Ile Asn Thr
            340             345             350

Asp Val Leu Ala Lys Pro Ile Asp Met Leu Met Leu Asn Gln Leu Lys
        355             360             365
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Glu Ser Phe Cys Glu Ile Arg Ala Gly Glu Leu Glu Thr Val Ala Thr
    370   375   380

Val His Ser Tyr Glu Glu Gly Met Pro Ala Val Pro His Lys Thr Asn
385   390   395   400

Leu Thr Ser Leu Asn Val Pro Pro Met Gly Leu Phe Tyr Pro Asn Leu
                405   410   415

Leu Val Pro Glu Ile Phe Pro Gln Pro Pro Arg Gln Trp Phe Gln Asp
            420   425   430

Tyr Glu Asn Met Leu Glu Asp Thr Trp Asn Met Asp Phe Gly Gly Gly
        435   440   445

Gly Asn Met Gly Leu Pro Met Trp Asp Ser Phe Ala Phe Ser Pro Ser
    450   455   460

Lys Pro Lys Lys Glu Glu Lys Ile Gly Leu Ala Glu Ala Ile Thr Ser
465   470   475   480

Ser Ile Leu Ser Ala Gly Arg Ile Asp Leu Arg Arg Lys Leu Phe Ser
                485   490   495

Ser Ile Gln Leu Ile Gly Gly Ala Gly Leu Thr Lys Gly Leu Val Ala
            500   505   510

Ala Val Glu Glu Arg Val Leu His Ala Ile Pro Pro Thr Glu Ala Ile
        515   520   525

Asp Thr Val Gln Val Leu Pro Ser Arg Thr Glu Pro Gln Phe Val Thr
    530   535   540

Trp Lys Gly Gly Ala Ile Leu Gly Ile Leu Asp Phe Gly Arg Glu Ala
545   550   555   560

Trp Ile Glu Arg His Gln Trp Met Val Asn Gly Val Asn Lys Gly Gly
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